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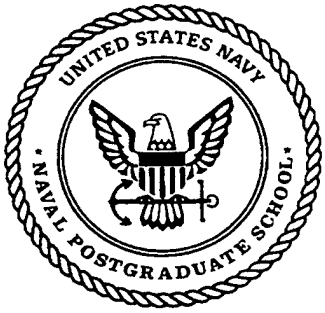

THESIS

PARETO OPTIMUM IMPROVEMENT IN GOVERNMENT CONTRACTING

by

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December 1999

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13. ABSTRACT *(maximum 200 words)* The Government regulates its procurement programs to correct what it perceives to be market failure and to implement its socio-economic policies. This research applies economic theory to determine if Pareto improvement is possible in three Government contracting areas: Small Business Programs, Cost Accounting Standards, and Certified Cost or Pricing Data. In cases of socio-economic implementation, Pareto improvement cannot be achieved. However, in cases of market failure, the Government can modify its regulatory stance to realize Pareto improvement. Specifically, it should increase the CAS threshold to $100M, move CAS waiver authority to the agency level, delete specific CAS requirements, and increase use of parametrics.

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PARETO OPTIMUM IMPROVEMENT IN GOVERNMENT CONTRACTING

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ABSTRACT

The Federal Government engages in regulatory efforts in its procurement activities for two reasons: to correct perceived market failure and to implement socio-economic policies. This research analyzes three major areas of Government acquisition for potential Pareto improvement: Small Business Programs, Cost Accounting Standards, and Certified Cost or Pricing Data. In cases where the Government seeks to implement socio-economic policy, as in the Small Business Programs, Pareto improvement cannot be achieved. However, in cases of market failure, Pareto improvement (making one party better off without making the other worse off) can be achieved. Pareto improvement can be realized by moving the CAS waiver authority to agency level, by eliminating specific CAS standards, and by increasing the CAS threshold to $100 million. It can also be effected by implementing Price-Based Acquisition in specific contractual situations and by increasing the use of parametric cost estimating.

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I. INTRODUCTION

A. BACKGROUND

For much of the past decade, the Federal Government has embarked upon an ambitious program, commonly referred to as "acquisition reform", to make sweeping changes to the Government contracting function. Congress passed statutes like the *Federal Acquisition Reform Act* (FARA) and the *Federal Acquisition Streamlining Act* (FASA) to "improve", "streamline", "reform", and essentially change the way in which the Government conducts business. Most of these changes have been intended to simplify processes and/or save money, both laudable objectives.

However, the Government has yet to look at its contracting policies from a strictly economics-based viewpoint, focused on efficiency, and for good reason. The Government's contracting policies and procedures are formulated on a multi-level basis, often the result of competing interests attempting to achieve objectives not necessarily efficient in nature. Congress, for example, plays a major role in the statutory formulation of acquisition policy. While many Congressional staffs undoubtedly consult with (and may even contain) Economics

scholars, the *overriding* concern of Congressional policy varies by program and even by fiscal year.

The Department of Defense continues to encourage its acquisition community to "reform" its way of doing business, to adopt "best practices", and to use a "best value" system of acquiring goods and services. Simply put, the message is: conduct business more efficiently.

Economic discussions invariably center around the term **scarce resources** and efficient allocation of those resources. In the Government, an agency's budget dollars, along with its human capital, comprise the most visible of the agency's scarce resources. To maximize its utility of those scarce resources, the Government should allocate those dollars as efficiently as possible; to do so requires examining acquisition policies and procedures for economic efficiency.

In summary, Congress and the agencies of the Federal Government have made great strides in changing the way the Government contracts with industry. While this success has been achieved in a relatively short period of time, it isn't yet clear whether the Government has achieved economic efficiency or has merely implemented different procedures. In fact, the Government may be able to institute further modifications to its contracting methods

to make at least one of the parties involved better off, without taking anything away from the other party; this is known in economic circles as **Pareto improvement**.

B. OBJECTIVES

The purpose of this thesis is to look at Government contracting rules, regulations, statutes, and/or policies from a standpoint of ***Pareto improvement***. The objective of this thesis is to analyze acquisition policies and procedures and identify potential changes to effect Pareto improvement; that is, are there areas of Government contracting where one party (Government or industry) can be made better off without the other being made worse off?

The research includes the origin of each policy discussed and an analysis of its costs versus its benefits. Further, it examines each policy area for potential Pareto improvement. Finally, this thesis will offer recommendations to effect Pareto improvement within the Government's acquisition policy realm.

C. RESEARCH QUESTIONS

Primary Research Question: Are there any policies, procedures, regulations, and/or statutes governing contracting within the Federal Government which can be modified/eliminated to effect Pareto improvement?

Secondary Questions:

1. What is the economic effect, in general, of Government acquisition regulations?

2. Can Small Business Set-Aside requirements be changed to effect Pareto improvement?

3. Can the Cost Accounting Standards (CAS) be modified to effect Pareto improvement?

4. Can the requirements for certified cost or pricing data be modified to effect Pareto improvement?

5. How might current acquisition policies and processes be changed to effect Pareto improvement?

D. METHODOLOGY

The methodology of this thesis was to use a deductive approach to analyze various Federal Government contracting policies, procedures, statutes, and/or regulations with a focus on Pareto improvement. Data were gathered in two ways. The first was a literature review from the Dudley Knox Library and the World Wide Web. The literature review provided information regarding current contracting practices, economic theory, and data pertaining to similar markets in the commercial world.

The second method was to speak with individuals involved in Federal Government contracting, both within the Government and within industry. The purpose of these

interviews was to gather expert insight into current contracting procedures and identify any limitations or artificial boundaries that may inhibit economic efficiency. Further, the interviews brought suggestions that may lead to Pareto improvement in Government contracting.

E. SCOPE OF THESIS

The scope of this thesis is limited to current published policies, procedures, statutes, and regulations involved in the conduct of Federal Government contracting. Because various local procedures may differ, this thesis addresses only issues that are standardized throughout the Federal Government (for example, Federal Acquisition Regulation (FAR) guidance.) Specifically, the scope includes:

1. Economic theory of the effects of Government regulation in general;

2. Analysis of the Small Business Set-Aside programs;

3. Analysis of requirement for Cost Accounting Standards (CAS);

4. Analysis of requirement for certified cost or pricing data.

5. Analysis of current acquisition policies and procedures to effect Pareto improvement.

F. ORGANIZATION

Chapter II. Economic Theory of Government Regulation

This chapter explores the economic effect of Government regulation in general and, by extension, as it pertains to the Government market. It includes a brief discussion of Government regulation in monopoly-type situations as well as the Government's propensity for "social" regulation of U.S. markets and the additional costs of doing business associated with both.

Chapter III. Small Business Programs

This chapter looks at the origin of the Small Business Set-Aside requirements, examines the size and scope of the programs, weighs the perceived costs versus the perceived benefits, and suggests areas ripe for Pareto improvement.

Chapter IV. Cost Accounting Standards (CAS)

Chapter IV contains the genesis of the Cost Accounting Standards, looks at the program requirements, examines the program from a cost/benefit determination, and makes suggestions for Pareto improvement within the CAS framework.

Chapter V. Certified Cost or Pricing Data

This chapter traces the history of certified cost or pricing data requirements, explains the limits of those requirements, looks at both the costs and the benefits of

maintaining the requirements, and looks for areas of Pareto improvement within the requirements.

Chapter VI. Conclusions and Recommendations

This chapter includes a summary of the conclusions stated previously throughout the research, answers the primary and secondary research questions, recommends changes to current acquisition policies/procedures to effect Pareto improvement in Government contracting, and suggests areas for potential future research.

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II. ECONOMIC THEORY OF GOVERNMENT REGULATION

A. INTRODUCTION

Most economic scholars consider the capitalist free market economy, consisting of a series of markets with producers and consumers of products and resources, to be quite efficient in the use and allocation of scarce resources. Competition in the market, specifically as seen through the competitive pricing system, is adjudged to be the mechanism by which the free market economy achieves efficiency.[Ref 9: p.5] The producers in the economy attempt to make as much profit as possible; they don't bother to consider the ramifications to social welfare in doing so. On the other hand, the consumer acts in his own best interest to maximize his utility, again with little consideration toward social welfare.

Yet the end result of these independent and rather selfish acts is that social welfare, in the Pareto sense, is maximized. As summarized by economist Kenneth Train,

> This consistency of private goals with social goals - the existence of this "invisible hand" that molds privately motivated actions into socially desirable outcomes - serves as the basis for much of economics as a field of thought and, to a great extent, provides the rationale for "free" markets.[Ref 36: p.1]

The corollary to this theory is the free market economy requires very little need for Governmental intervention to assure economic efficiency. Other than perhaps providing some broad legal guidelines by which the system will operate, the self-regulating and "self-adjusting" free market economy would have little use for Government in its role as an interloper.

The Government does, however, impose regulation on the free market national economy and it copiously regulates a much smaller market as well - the market which falls under the rubric of "Government acquisition" or the procurement of goods and services for the Federal Government.

In both cases (henceforth referred to as a single market for simplicity's sake) the Government imposes regulation in those cases in which it believes the free market economy must, for some reason, rely on Government intervention to function properly. This situation is commonly referred to as "market failure." In cases of market failure, the Government would seek to impose what is known as *economic* or *industrial* regulation. The Government also imposes regulation in the market when it seeks to manipulate the market to achieve its own socio-economic goals, a policy known as *social regulation*.

1. Industrial Regulation

The Federal Government seeks to impose industrial regulation when it believes market failure has occurred. The major types of market failure usually identified by economists are those of monopoly, provision of public goods, and externalities. For the purpose of this research, externalities will be ignored since they are rarely cited as having a major impact in the arena of Government contracting.

A pure monopoly exists when a single firm is the sole producer of a product for which there are no close substitutes.[Ref 24: p.537] Utilities, for example, are often cited as examples of monopolies; indeed, it would be difficult to substitute for the electricity one obtains from the local electric company. In monopoly situations, the Government is normally concerned with what is considered "excess profit", brought on by the monopoly's ability to affect prices by restricting output.

Obviously the Federal Government purchases so many items, ranging from pencils to horses to space shuttles, that no one firm has monopoly power in the "Government acquisition market". However, because many Government agencies (e.g., Department of Defense (DoD) and National Aeronautics and Space Administration (NASA)) require

products unique to their own missions, those agencies operate in markets where free and open competition often is not economically feasible for producers.

DoD, for example, operates in a market that escapes absolute definition. However, it is often compared to an oligopolistic market - that is, a market dominated by a relatively few sellers of a particular good or service, in this case, military unique items (e.g., tanks, missiles, planes, etc.) However, because oligopolies are, arguably, similar to monopolies in market structure, the Government expects them to operate in the same way and with the same economic results. It also tends to regulate the market accordingly.

The Government, then, imposes heavy industrial regulation on Department of Defense contracting. It seeks to control excess industry profit brought about by a production level that is less, at a price that is higher, than what one would expect in a free and open competitive market. It employs a textbook method for conducting business in an oligopolistic market, *cost reimbursement pricing*, but then layers additional regulatory requirements to further impede market efficiency. Some of these requirements, notably Cost Accounting Standards (CAS) and

certified cost or pricing data, will be examined in this research.

2. Social Regulation

Beginning in the middle of the 1960s, the people of the United States began to reconsider their priorities in the area of quality of life; health, safety, and the environment, among other things, became important priorities. In a 1965 Gallup poll, 17 percent of respondents regarded reducing air and water pollution as one of the three most important problems in the country. Just five years later, that number had risen to 53 percent.[Ref 21: p.1]

The Government then, at the behest of its constituents, began to formulate and implement a new and different type of regulation, one concerned not necessarily with economic efficiency, output, or pricing. Instead the Government began to focus on *methods* of production, the *impact* of production on the quality of air and water, consumer safety implications, and other aspects of production which affected social welfare.

Unlike industrial regulation, which is targeted toward specific industries, social regulation can be considered to apply "across the board"; that is, it applies to just about everyone. So, naturally, the dawn of the social regulation

revolution applied to firms in Government acquisition markets, including DoD markets, as well.

But the Government also recognized it was a major economic force (and still is - Government expenditures, at all levels, account for approximately 34% of Gross Domestic Product, billions of dollars of which are Federal Government specific.[Ref 17: p.24]) As such, it determined it could use its economic clout to implement selected national socio-economic policies through the Government acquisition process. In 1997, the Government had more than 50 legislative tools at its disposal to exercise its desired socio-economic policies, including several targeted at promoting increased participation by small and/or "disadvantaged" businesses.[Ref 28: p.2] Of these tools, one current group of policies in particular, the Small Business Programs, will be analyzed in this research.

B. COSTS AND BENEFITS OF GOVERNMENT REGULATION

The overarching goal of nearly any form of Government economic regulation is to influence market behavior by implementing public policy. One would be naïve, however, to assume that is the only reason regulations are mandated. Regulations are, after all, implemented by politicians and bureaucrats, many of whom have ulterior motives like career advancement, reelection, or political support. One theory

of public regulation, the Capture Theory, even suggests that, over time, the regulated industry gains control over the process by which they are regulated.[Ref 36: p.4] However, because each case would have to be considered individually with respect to motivation, this research assumes Government regulation is more or less designed, in some respect, to improve social welfare.

Logically, then, the Government should expect to derive identifiable benefits from its regulatory efforts. But regulation often has side effects and results in direct and indirect costs that may or may not exceed the expected benefits. As Lester B. Lave of the Brookings Institute puts it,

> Regulation requires resources, but more important, it is virtually impossible to regulate so that incentives are not distorted, and this often leads to even greater inefficiency than in the unregulated market…[Ref 21: p.31]

1. Benefits of Government Contracting Regulation

- ***Promotes competition.*** The theory that free markets operate efficiently independent of Government intervention is based upon the notion of competition. As noted earlier, many Government unique requirements are produced in markets dominated by few sellers and characterized by monopolistic tendencies - a decidedly less than competitive market structure.

So the Government implements policy to promote competition, as seen in sections of the Competition in Contracting Act of 1984 (CICA). [Ref 35: p.6] It requires each contracting action be open to all qualified participants and it provides *de facto* subsidies to some businesses - all in the attempt to stimulate competition in industry and derive the efficient resource allocation inherent to a competitive market. By doing so, it expects to pay less for the goods and services it acquires.

- ***Provides a legal framework.*** Obviously, the market economy needs a somewhat stable legal and social environment in which to function. The Government, through regulation, provides this stability by defining business relationships, preventing and detecting criminal activity, authorizing legal recourse for disputes, and enforcing legal contracts.

- ***Provides a "social good."*** One of the Government's many functions is to reallocate resources and it does so in many ways - through taxes, tariffs, and social welfare programs, for example. It also promotes "social welfare"

causes through its contracting procedures by mandating that a range of purchases - those greater than $25,000 but less than $100,000 - be reserved exclusively for "small business." By doing so the Government sustains the socially popular viability of small business even though a more efficient producer may lie elsewhere.

- ***Alleviates "asymmetric information."*** When the Government purchases an aircraft carrier, for example, it does so knowing the suppliers are few. After all, how many companies can build an aircraft carrier? Further compounding the complexity of this market is attempting to determine price. Price is normally a function of the marginal utility of the buyer - a value judgment. But how does one assign a value to an aircraft carrier when the buyer is a nation of 275 million people?

Because of the difficulty in assigning a price to such a complex purchase, the Government employs cost reimbursement contracting methods. It essentially adds a "fair and reasonable" profit to the cost of building the ship. Unfortunately the Government has no idea what it costs to build

an aircraft carrier - only the manufacturer knows that. This is known as "asymmetric information" - one side has more information in the transaction than the other. The Government, being at a disadvantage, regulates the process through CAS and certified cost and pricing data guidelines, gaining access to the information in an attempt to level the playing field and improve its chances of paying a fair and reasonable price.

2. Costs of Government Contracting Regulation

- ***Administrative burden.*** The document-laden and paperwork-intensive requirements associated with Government regulation are costly and time consuming. Because of this, many contractors are discouraged from doing business with the Government. In *An Analysis of Reasons Companies Refuse to Participate in Defense Business*, Dr. David Lamm lists burdensome paperwork as a major reason companies refuse to do business with DoD.[Ref 20: p.88) This burden acts as a barrier to entry in the Government markets.

- ***Restricts competition.*** As noted above, regulatory administrative requirements can act as

a barrier to entry, thus discouraging competition. In other instances, the Government limits competition by mandating entire business frameworks be erected, as in the case of CAS. Smaller companies, which produce less output and are therefore unable to absorb what are essentially higher fixed costs, are eliminated from competing for certain higher dollar value contracts because they do not believe it in their best interests to pay for regulatory compliance.

- ***Raises cost of doing business.*** Regulations that impose an administrative burden require additional resources and limit competition (at least indirectly), increasing the Government's overall price. On the one hand, the producer passes along the costs it incurs due to regulation through higher overhead and General and Administrative (G&A) rates (i.e., higher prices.) Additionally, all of this regulation requires oversight by the Government, meaning the Government allocates resources to monitor compliance with its regulations, thus indirectly increasing its cost of doing business.

- ***Inefficiently reallocates resources.*** The Government, as a major economic force, has billions of dollars to spend each year on goods and services. Despite "lowest price, technically acceptable" and "best value" guidelines, the Government (somewhat perversely) is not always interested in paying the lowest price or getting the best value. In fact, in many instances it is essentially prohibited from doing either. Why? Because all Government purchases between $25,000 and $100,000 must (with few exceptions) be purchased from "small business", often not the low price or best value. In these instances, the Government is more interested in pursuing another agenda, supporting small business, than it is in efficiently allocating resources.

C. PARETO IMPROVEMENT - A BRIEF ILLUSTRATION

A Pareto optimum market situation is one in which no one can be made better off without someone else being made worse off. Assuming a two party market (Government and industry), Pareto improvement would entail making one entity, say Government, better off without making the other party, industry, worse off. The difficulty lies in

determining where, or if, Pareto improvement can be achieved.

A simple example of Pareto improvement is illustrated in the area of Government-furnished property. In practice, the Government enters into contracts in which it provides some of the equipment used by the contractor in the performance of the contract. Naturally the Government desires the contractor to keep track of the equipment in its possession. As a result it has established procedures for contractors to follow with respect to Government-furnished property control.[Ref 12: part 45]

In his *White Paper on Government Property*, Robert C. Spreng cites a study in which the cost of keeping track of Government property was estimated at $80 per item and

> …this was in a laboratory environment where the record keeping was done by the technical people assigned to the program and where the majority of items were materials valued at less than $10…[Ref 33: p.2]

So the contractor was paying $80 per year to track items worth $10. Clearly this is not a Pareto optimum situation. In this case both the Government and the contractor can be made better off.

The laboratory would be better off by making direct cash payments to the Government for all items valued at less than $80 - the per item cost of administration. In this case, where the majority of items were valued at less

than $10, the lab would be better off by $70 per item. In addition, the laboratory could then redirect its labor resources, the technical people, to the higher valued allocation, namely doing technical work. The Government would be better off since much of this cost is passed along in the form of higher prices in overhead and G&A - and it would benefit from the technical people devoting their full attention to the project instead of counting equipment. Additionally, the Government would expend fewer resources monitoring the contractor's property control efforts.

While this is admittedly a simplistic approach to a topic that could itself be the focus of research, it illustrates the cost associated with Government regulation. Further, this example demonstrates the key to Pareto improvement in Government contracting lies in taking a less regulatory approach to the process.

D. SUMMARY

The Government regulates both the national economy and the "micro-economy" encompassing the realm of Government contracting. It engages in economic or industrial regulation in the cases of market failure like monopoly. The market structure in which the Department of Defense procures its goods and services is similar in market structure to a monopoly and is regulated accordingly. CAS

and the requirements for certified cost and pricing data are two examples of this regulation.

The Government also engages in social regulation in which it seeks to implement its socio-economic policies through the Government acquisition framework. The Government had, in 1997, over 50 legislative tools to use in the social regulation of Government contracting.(ref Shine) The Small Business Programs are an example of social regulation in the Government acquisition arena.

Government contracting regulation has several benefits in that it promotes competition, provides a legal framework, provides a "social good", and deals with the problem of imperfect information. However, it also entails several costs, including a rather large administrative burden, increased cost of doing business, and an inefficient allocation of resources. As seen by the Government-furnished property illustration, the key to Pareto improvement in Government contracting may lie in taking a less regulatory approach to the process.

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III. SMALL BUSINESS PROGRAMS

A. HISTORY

The Government, while normally concerned with obtaining the "best value" or lowest price when contracting for goods and services, often foregoes both of those objectives in the interest of pursuing American socio-economic goals. The Buy American Act, for example, is legislation designed to encourage Federal Government procurement of American made goods and services.[Ref 18: p.12] While instances of socio-economic policy seeping into Government business practices can be cited throughout the history of the country, the Government really began widespread use of social regulation when contracting for good and services during the Great Depression. In the absence of private sector employment opportunities, the Government began instituting massive public works projects designed to provide employment, at Government expense, for it citizens.

Then, during World War II, the Government began to recognize its increasing dependence upon small businesses as war mobilization efforts stalled due to the lagging industrial capacity of small business.[Ref 40: p.15] The scarcity of resources, both labor and material, certainly

contributed to the problem but the Government agencies' preferences for the mass production capability of large industry bypassed much of the small business community.

At the conclusion of the war, Congress began what would prove to be the first steps in augmenting small business' share of Government procurement dollars by legislating the Armed Services Procurement Act of 1947, the Federal Property and Administrative Services Act of 1949, and the Defense Production Act of 1950. In the latter, Congress asserted its preference that small business obtain a "fair share" of Government business.[ibid] Continuing the evolution, Congress created the Small Business Administration (SBA) in the 1953 Small Business Act. In that legislation, Congress spelled out its intent to use Federal Government funds to aid small business growth,

> The policy of Congress is that...the [G]overnment should aid, counsel, assist, and protect, insofar as possible, the interests of small business in order to...insure that a fair proportion of the total purchases and contracts or subcontracts for...the Government...be placed with small business.[Ref 29: p.1]

While Congress enacted various amendments to incrementally strengthen the Small Business Act, perhaps the most powerful piece of legislation that solidified Congress' commitment to small business was Public Law 95-507, passed in October of 1978. In brief, this law emphasizes that the Government:

- Commits strongly to subcontracting with small business and small, disadvantaged business using large prime contractors
- Requires, on large contracts, a detailed subcontracting plan
- Monitors, through the SBA, performance against that subcontracting plan
- Establishes an Office of Small and Disadvantaged Business Utilization to assist small businesses
- Sets annual goals, by agency, for awarding contracts to small businesses and small and disadvantaged businesses (SDBs).[ibid]

Obviously, then, the Federal Government's legislatively mandated pledge to increase its commitment to, and therefore increase its funding of, small business led to substantial growth in the budget and labor force of the SBA.

For example, in 1980, shortly after the law was passed, the SBA had a budget of $112 million. Today the SBA has nearly 50 different field offices, employs over 3,000 employees, and has a budget in fiscal year 1999 of over $800 million.[Ref 29: p.1] It is the catalyst for nearly every new small business initiative in the United States today and, as will be evident in the following

sections, is responsible for administering a large part of the Government's programs to guarantee small business participation in the field of Government procurement.

B. SMALL BUSINESS PROGRAM REQUIREMENTS

The Government has a number of programs within its procurement function designed to ensure that small business, as a whole, receives a minimum amount of business. A comprehensive overview of each is perhaps best suited for a body of independent research on this topic alone. For the sake of brevity, and because they represent the most visible of the Government's programs, this research addresses the Small Business Set-Aside, the Small and Disadvantaged Business (SDB) programs, and the Certificate of Competency (CoC) program.

1. *Small Business Set-Aside Programs*

The Federal Acquisition Regulation (FAR) sums up the purpose of this program quite nicely when it states that the purpose is "to award certain acquisitions exclusively to small business concerns."[Ref 12: part 19] Further, it defines a set-aside for small business as "the reserving of an acquisition exclusively for participation by small business concerns."[ibid] Set-asides may be total, meaning an entire procurement action, or partial in which a portion of a larger contract is set-aside for small business. The

Office of Federal Procurement Policy, in 1991, established a Government-wide goal to award 20% of prime contract dollars annually to small businesses and 5% of both prime and subcontract dollars annually to small businesses owned and controlled by socially and economically disadvantaged persons.[Ref 1: p.6-2]

- ***Total set-asides.*** With few exceptions, the Government grants a small business set-aside for every acquisition of supplies or services which will be between the dollar ranges of $2,500 to $100,000.[ibid] However, two conditions must be present for this set-aside to occur. First, the contracting officer must reasonably expect to receive offers from at least two responsible small businesses. Also, the award must be made at a fair and reasonable price. The contracting officer may also (in certain instances) designate contracts over $100,000 as set-asides, but the gist of this program is that small business has a virtual lock on the market for supplies and services in the $2,500 to $100,000 range. This range encompasses over 95% of all Government procurement transactions.

- ***Partial set-asides.*** In the event a contracting officer finds it inappropriate to grant a total set-aside, FAR Part 19 requires him to set aside a part of

an acquisition when (a) the requirement can be divided into two or more production runs and/or lots, (b) one or more small businesses are technically capable and have the capacity to meet the need at a "fair market price" and (c) the contract is not subject to simplified acquisition procedures.[ibid] In doing this, the Government ends up dividing the contract into a set-aside portion and a non-set-aside portion and negotiating each separately. Generally speaking, the awards on the small business set-aside portion of the contract are made at the *highest unit price for each item* awarded on the non-set-aside portion *plus* transportation and other added cost factors.[Ref 1: p.6-4]

2. Small and Disadvantaged Business Programs

SBA oversees two specific programs aimed at providing assistance to SDBs. Those programs are the 8(a) Business Development Program and the Small Disadvantaged Business Certification (SDBC) program. These programs were created by Congress in 1988 through passage of the Business Opportunity Development Reform Act and are run by SBA's Office of Minority Enterprise Development (OMED). They are aimed at fostering development in small business concerns

owned by minorities and other classes of economically and socially disadvantaged individuals.

Essentially, to qualify for these programs, a small business must be at least 51% owned and controlled by one or more people presumed to be socially and/or economically disadvantaged.[Ref 29: p.1] For example, under the Small Business Act, members of the black and hispanic communities are automatically presumed socially disadvantaged. To qualify as economically disadvantaged also, the socially disadvantaged individual cannot have a net worth greater than $250,000.[ibid] The business must also have a reasonable prospect for success (defined as two years of business experience) in the private sector. The maximum term for participation is nine years in the 8(a) program and three years for the SDBC program. All 8(a) firms automatically qualify for certification under the SDBC program.[ibid]

The 8(a) program offers eligible participants a number of decided benefits. Among them are:

- Direct loans from the SBA
- Management and/or technical assistance
- Preferential treatment in the use of Government property
- Surety bond waivers

- Specially awarded Government contracts.

[Ref 28: p.37]

The gist of the 8(a) program is that, in many cases, SBA contracts directly with the Government agency to fulfill a contractual need. (SBA has recently struck an agreement with 25 different agencies to delegate this authority directly to the agency.) SBA then subcontracts directly to the industry participant on a non-competitive basis to actually perform the contract.

In other words, the 8(a) program allows its participants to receive Government contract awards, *awarded on a sole-source basis,* of up to $3 million for goods/services and up to $5 million for manufacturing.[Ref 29: p.1] Again, these small businesses do not have to compete for the contracts. Further, SBA may appeal a contracting officer's decision not to award a contract under the 8(a) program.

While the 8(a) program offers a rather broad range of assistance, the SDBC program covers Federal Government procurement only. This program provides two distinct benefits to firms that qualify for certification. First, participants are allowed a 10% *price evaluation adjustment* on selected procurements (normally those over $100,000 where the firm is bidding competitively as a prime

contractor.)[Ref 29: p.2] Phrased another way, SDBC firms are allowed an upward price variance (an inefficiency factor, in effect) of 10% above competitive fair market price.[ibid]

Another direct benefit of the SDBC program is the *evaluation factor*, in which the Government pays prime contractors to subcontract to SDBC firms. This unique incentive is provided in the form of a credit and applies to competitive negotiated contracts over $500,000.[ibid] It does not apply to set-aside contracts or 8(a) contracts.

3. Certificate of Competency (CoC)

The purpose of the CoC program, as stated by the SBA, is to ensure that small businesses, especially new entrants to the Government market, "receive a fair share of Government contracts."[Ref 2: p.1] A CoC is basically a written certification by the SBA attesting to a specific small business's capability to perform a specific Government contract.

One of the responsibilities of a Government contracting officer, in determining to whom he should award a contract, is to determine whether the offeror(s) is "responsible." Briefly, this means he must determine if the business competing for the contract has the right mix of business assets (including, but not limited to,

capability, competency, capacity, credit, integrity, perseverance, and tenacity) to successfully fulfill the contractual requirement.[Ref 12: part 19]

If, in reviewing an offer from a small business, he determines the offeror lacks one of those elements of responsibility, the contracting officer is required to withhold the contract award and refer the matter to the SBA.[ibid] The contracting officer and the SBA normally then attempt to resolve the issue of the firm's responsibility. If they cannot, the SBA has statutory authority to issue a CoC to that small business for that particular contract. The contracting officer is bound by the Small Business Act to accept the CoC and is further prohibited from questioning the responsibility of the firm as it relates to that contract.[Ref 2: p.1] As such, the contracting officer, in contracting situations where Certificates of Competency are issued, may be legally required to award a contract to a small business that he feels is incapable of meeting the contractual requirements.

C. SMALL BUSINESS PROGRAMS: COST/BENEFIT ANALYSIS

In order to examine the potential benefits and costs associated with the Government's various small business programs, it's important to understand their economic impact. In essence, these programs are economic subsidies given by the Government to a particular market segment. As one might anticipate, many of the benefits and costs the Government expects to bear when implementing these programs revolve around the subsidy feature.

1. *Benefits of Small Business Programs*

Given the relative popularity, and longevity, of these programs, it stands to reason the Government would realize some tangible benefits from its socio-economic policy of subsidizing small business. While this is debatable in that the majority of the benefits center around a concept that is not particularly quantifiable, in theory it's easy to see why the programs continue.

- ***They provide a "social good."*** The three major branches of the United States Government - Executive, Legislative, and Judicial - perform many different functions in their combined role as Government of the republic. One of the Government's major roles is to collect funds, through taxes, tariffs, fines, penalties, and other "fundraising" mechanisms, to

support the operation of the Government. In doing so, they also reallocate resources by taking money from some groups of citizens and giving it to other groups of citizens. In many cases this is through social welfare programs like Aid to Families with Dependent Children, Medicare, food stamps, and the like. In other words, the Government redistributes resources, through taxes, from private use to public use. This changes the composition of what would be produced otherwise, to include production of social goods, since private markets would be unlikely to provide for their production.

Likewise, subsidizing small business can be viewed as a form of a social good. The Government, by redirecting funds to the small business sector, more or less "guarantees" the small business community a minimum amount of revenue. Because it is well publicized that small businesses typically have difficulty generating a profit, or even remaining solvent, in their first five years of existence, the largesse of the Government programs acts as a social welfare "safety net" for those firms that seek Government business. Fullenbaum and McNeill, in a 1993 research study, concluded that being awarded

Federal Government contracts "greatly increases the chances for a firm's survival." [Ref 14: p.2] Further, they noted that the failure rate of small Federal Government contractors was only about half of that of small firms in general.[ibid] Keeping in mind that the Government contracts for all types of supplies and services and it quickly becomes apparent a large number of small businesses, in a variety of business sectors, may benefit from this social good. Indeed, in fiscal year 1998 alone, about 45,000 individual small businesses were awarded Government contracts in excess of $25,000.[Ref 2: p.4] Additionally, the SDB programs have their roots in the Government's Equal Opportunity programs, as they are intended to shield minority-owned businesses that, in the eyes of some in Government, would potentially be subjected to prejudice or cultural bias. Oddly enough these programs are, in and of themselves, discriminatory by nature.

- ***The programs provide employment***. There is little doubt the small business sector of the U.S. labor market provides many of the new jobs created in this country. More mature industries, such as the automobile or steel industries, have accumulated

sufficient capital resources to enable them to replace expensive human capital with cheaper, more efficient automated resources. According to SBA, "small business-dominated industries" provided 64% of the 2.5 million new jobs created in the U.S. in 1996.[Ref 29: p.1] Oddly enough, the SBA also claims, in the same reference, that small businesses provide "virtually all of the net new jobs added to the economy."[ibid] The question is, do small businesses enrolled in Government programs account for ***net*** new job creation? In Shine's research of the 8(a) program, he cites SBA records claiming 143,500 jobs produced by firms enrolled in the 8(a) program in 1994.[Ref 28: p.73] He also points out that, on average, only 46% of those firms' revenues were derived from participation in the 8(a) program. In other words, little more than half of those "created" jobs can actually be credited to 8(a) program participation.[ibid] However, when one examines the inefficiency of purchasing goods and services at prices *higher* than competitive market prices, an argument can be made that these programs actually slow job growth. This topic will be discussed in the next section analyzing the costs involved with Government small business programs.

2. *Costs of Small Business Programs*

While many different costs can be attributed to the Government's pursuit of socio-economic goals in the small business arena, the overwhelming majority of them can be traced back to the inefficient reallocation of resources. That the Government redirects resources from their most efficient use to a less efficient use results in a number of different outcomes but with one thing in common. They add to the Government's cost of doing business.

- ***The programs inefficiently reallocate resources.*** This statement is true on a number of different levels and from a number of different perspectives. First, these programs mandate that certain percentages of Government business be allocated to the small business sector, regardless of whether or not it is the most efficient producer. The SDBC program, in fact, builds in an upward price inefficiency adjustment of 10% when the participating firms are competing for a contract. By setting aside all contracts between $25,000 and $100,000, the Government guarantees that business will be awarded to small business concerns even if a larger corporation is capable of producing more efficiently. In those cases where there is a more efficient producer, the Government, by reallocating resources to

the small business sector, *overconsumes* the amount of product it would have consumed otherwise. The additional resources it used to direct its business to the inefficient producer would have been used elsewhere.

Further, by subsidizing the small business sector, the Government inefficiently reallocates labor and capital into the small business markets. In a competitive environment, the most efficient producers gain competitive advantage. The competitive forces of the market then act to force the inefficient producers out of the market, taking their resources to be employed elsewhere. However, by their very nature, subsidies create surpluses in the market - inefficient producers can continue to supply the market because, in this case, the Government essentially guarantees some degree of business to small business concerns. The Government, through policy, makes them competitive because they are unable to do so by themselves. Interestingly, then, the Government compounds the inefficiency problem by discouraging the migration of resources to more efficient uses, thereby increasing prices in its own markets and further distorting resource allocation. Last, but certainly not least,

the Government ***pays*** for the privilege of doing all of this. The portion of the SBA budget devoted to administration and operation of just the SDBC programs was budgeted at over $12 million in fiscal year 2000, a sum the Government could have used elsewhere were it not employed in this pursuit.

- ***The programs restrict competition.*** While the Government tends to claim it promotes and encourages competition, these programs are actually anti-competitive. The small business set-aside is a barrier to entry to the market for Government contracts priced between $25,000 and $100,000. It actually *prohibits* competition from outside the small business sector (in most cases.) Barriers to entry, in economic theory, are normally described as a "market failure." In this case, Government regulation creates market failure - conversely, in other situations, the Government intervenes in the market to correct a perceived market failure (e.g., as in the case of Cost Accounting Standards.)

The 8(a) program can be described as even more restrictive since it awards contracts to small business participants on a sole source basis. The program is set up to avoid making its participants

compete for business. Similarly, the SDBC program is constructed to allow its member firms to compete with a 10% price advantage over its competitors. Recall, of course, that competition in the market is what theoretically allocates resources efficiently and acts to exert downward pressure on price. In other words, competition is a major factor in providing the Government with its highly prized "best value." The absence of competition, then, results in a less than optimal value.

- ***The programs may inhibit job growth.*** Contrary to SBA claims, the Government's small business programs may actually slow job growth instead of creating jobs. Shine, in his analysis of the 8(a) program, rightly points out that the program may simply shift jobs as opposed to create them. He observed that the Government would purchase those same goods and services whether or not the 8(a) program existed. [Ref 28: p.74] He concludes that the labor resources are merely reallocated from one market to another, the 8(a) small business market.[ibid] What Shine did not address, however, is that the inefficiencies of the program result in higher prices to the Government and that this may affect the job creation issue. For

example, all other things being equal, the Government is able to consume *less output* because it is paying higher prices than it should. If the Government paid market prices (i.e., lower prices) it could consume a larger volume of output. In theory, this would require more of the production resources used to create the output - labor and capital. So while the Government subsidized small business programs may create more jobs for *those particular companies*, overall they may entail an opportunity cost to the economy as a whole in that those jobs, plus others, may have been created elsewhere in the absence of the programs. In other words, the Government may be able to "create" more jobs if it allocated and consumed resources more efficiently than its small business programs allow it to do.

D. ANALYSIS FOR PARETO IMPROVEMENT

In examining programs involving social regulation, like the small business programs, it's important to separate the goals of the programs from the methods by which the goals are pursued. If the goals are not clearly defined, one cannot measure efforts to improve upon the goals. For example, in the case of the SDBC program, one of SBA's stated goals is to certify SDBs for "participation

in Federal procurements aimed at overcoming the effects of discrimination."[Ref 29, p.1] Therefore, to actually realize Pareto improvement, one would need to determine (a) if the federal procurements actually involving the SDBC firms are somehow related to overcoming discrimination and (b) how to better engage these firms in their quest to overcome discrimination. Because this entire concept is somewhat nebulous - as are the stated goals for many of the Government's small business programs - it becomes necessary instead, in an attempt to achieve Pareto improvement, to try to modify the **methods** the Government uses to pursue these goals. If, in modifying the methods, one party becomes better off without making the other party worse off, then Pareto improvement (or a form thereof) has been achieved.

1. *Discontinue SBA Certificates of Competency*

As mentioned previously, one of the duties the FAR prescribes to the contracting officer is that of determining if an offeror is "responsible." As the focal point for accountability in all matters associated with the Government's contractual obligations, the contracting officer exercises wide latitude in judgment in making determinations concerning cost, price, value, past performance, and other factors both tangible and

intangible. The determination of responsibility is a similar judgment call based upon a reasonable preponderance of available "evidence" regarding a firm's capability.

When a contracting officer makes a decision of non-responsibility with respect to a small business, the firm generally has six days after notification to file for a CoC. The SBA then has another 15 days to decide if it will issue a CoC to that particular firm. In other words, the prospective contractual action is delayed by three weeks.

Table 3-1 (below) shows the number of referrals, applications, and Certificates of Competency actually issued by SBA in the past three years.

Table 3-1

	Referrals	Applications	CoC Issued
1996	1257	606	258
1997	796	404	203
1998	531	241	134

[Ref 2: p.3]

A referral, by SBA standards, is a determination of non-responsibility by a contracting officer, forwarded to SBA for consideration. As is evident by the data above, fewer than half of all firms declared non-responsible even bothered to file for a CoC. Further, SBA issues a CoC only

to about half of all of those who bother to apply. Stated another way, SBA issues CoCs to about 25% of those firms determined to be non-responsible by contracting officers.

To put this into even better perspective, the number of referrals over those three years represents .006% of all contract actions reported in the Federal Procurement Data System for that period.[Ref 2: p.3] That means the number of CoCs issued in that period represents .0015% of all contract actions or 15 contracts per million, a relatively small percentage.

However, due to the program requirements, over 400 contracts a year, on average, are delayed at least a week (waiting for the six day application window to expire.) Another 200 are delayed 21 days until the SBA decides to disallow the CoC. Obviously the delay entails a cost in time, effort, and money.

Add to that the cost of the SBA's six area offices that handle the CoC program and the 14 CoC specialists that are dispersed throughout those offices.[ibid] In addition, each of those offices employs an attorney and financial specialists to assist in evaluating the referrals.

It's easy to see the costs of this program far outweigh the benefits. The Government absorbs delay on hundreds of contracts a year and employs dozens of people

to oversee a program intended to "correct" a statistically small policy decision. The word correct is in quotations because the CoC program does not correct anything - instead, it expends a great deal of resources to get a second opinion. Essentially the program simply pays to give another Federal Government agency, one with no contractual accountability, the right to ***overrule*** the non-responsibility determination made, in accordance with the procedures prescribed by the FAR, by the contracting officer.

Simply canceling this program would save the Government hundreds of thousands of dollars, perhaps even millions, when one begins to consider the delays, salaries, time, paperwork, and office expenses involved. However, one small problem remains - the .0015% who actually receive a CoC and are then allowed to ply their trade through a Government contract. Canceling the program would deprive them of sales, revenue, and profit. Hence, they are worse off.

Certainly the Government, with all of the money it saved, could reimburse these contractors and correct the situation. Then no one would be worse off, the Government would be better off, and Pareto improvement would be achieved. (More accurately, the principle by which the

gaining party actually provides compensation to the party made worse off is a derivation of Pareto improvement known as *Marshall improvement*. This principle will be discussed further in later pages.) Of course, in the absence of the program the Government couldn't identify the .0015% but it's not relevant since the Government wouldn't pay them anyway.

The Government wouldn't reimburse them because the Government would have no contractual obligation to those parties. Further, the Government would receive nothing in return for paying those parties. So, despite the fact the costs of this program far outweigh the benefits, and despite the fact that canceling the program would result in significant resource savings, Pareto improvement cannot be achieved because the Government cannot, and would not, reimburse the "losing" parties.

2. *Examining Other Aspects*

Based upon the analysis in the preceding pages, one thing quickly becomes clear – in practice, none of the methods by which the Government pursues its small business socio-economic agenda can be modified to make one party better off without making the other worse off. The reason is that the methods are, by their very nature, ***designed*** to benefit small business at the expense of the Government.

In other words, the programs are purposely designed to be inefficient.

Small business set-aside programs, for example, limit the amount of competition in a certain price range of contractual actions. While it certainly benefits the small business community, there are some large contractors on the margin who could produce more efficiently if allowed access to the market. Similarly, the 8(a) program awards contracts on a sole source basis. Even though the Government could likely achieve savings on some of these contracts due to the economies of scale a larger firm may offer, it chooses to accept a more inefficient producer in order to guarantee business to the 8(a) firm. (Not to mention the rather odd arrangement of contracting with SBA and having SBA subcontract to the 8(a) firm.)

The same holds true for the SDBC program in which the Government readily agrees to pay prices 10% higher than market, as well as the added expense of paying large prime contractors to hire an SDBC subcontractor. Additionally, all of the programs have stated quotas for contract awards to small business factions, quotas most Government agencies strive to meet.

3. *Introducing Marshall and Hicks-Kaldor*

As mentioned above, one derivation of Pareto improvement, developed by economist Alfred Marshall, is centered around a compensatory principle in which the party made better off actually makes cash payment to the party being made worse off to abrogate the loss. In this way, as long as the scenario resulted in net gains from the transaction, and as long as the gaining party agreed to and actually remitted payment, Marshall improvement is achieved. For example, assume the Government could save $8 million from canceling the SDBC program but it would result in a net loss of profit of $6 million to all of the firms enrolled in the program. If the Government canceled the program and paid out $6 million to the firms losing profit, it would still be better off by $2 million. The firms, by way of compensation, would be no worse off than before. Hence, Marshall improvement has been realized.

However, as noted in the subparagraph (1) above, the Government is unlikely to remit any payment for which it has no contractual obligation to do so. (Additionally, it's likely the Government would incur added expense by establishing another bureacracy to adjudicate any "loss" determinations.) Even in the event it would be more efficient to do so, the Government would bypass the

opportunity to see Marshall improvement because it is realizing, from a contractual perspective, nothing in return.

However, the ***Hicks-Kaldor criterion*** deals with the compensation issue in a decidedly different manner. Hicks-Kaldor states that efficiency is achieved if the gaining party is able to, but actually does not, reimburse the party being made worse off. Hicks-Kaldor, then, is a mythical compensation that never takes place. It recognizes *theoretical* improvement through situational changes resulting in a net gain to the combined parties involved. Applying Hicks-Kaldor to the CoC example in subparagraph (1) above results in a theoretical efficiency improvement since the benefits of canceling the program far outweigh the costs of doing so. By extension, as long as the Government saw net gains from modifications to any of the socio-economic programs described above, application of Hicks-Kaldor would result in improvement. However, without applying Hicks-Kaldor, improvement in efficiency cannot be achieved in the Government's pursuit of its small business socio-economic goals.

E. SUMMARY

The Government, while normally concerned with achieving "best value" in its contracting practices,

sometimes foregoes that goal in order to pursue other goals. One of those other goals is the implementation of a socio-economic agenda, like the Government's small business programs. The small business programs had their genesis in World War II but really began to grow with the advent of the Small Business Act in 1953.

The three small business programs examined were the Small Business Set-Aside program, Small and Disadvantaged Business (SDB) programs (including the 8(a) Business Development program and the SDBC program), and the Certificate of Competency (CoC) program. Each of these programs essentially subsidizes small business at the expense of the Government, creating a challenge to effect Pareto improvement.

For example, the benefits of canceling the CoC program far outweigh the costs but there remains a very small percentage of small businesses that would be worse off if the program were canceled. And while the net gains from the transaction would surpass the net losses, unless the Government actually compensated those businesses, Pareto improvement cannot be achieved. Because the Government would not reimburse the losers, even Marshall improvement cannot be realized.

It should be noted, however, that from a *long run* economic perspective, these businesses may actually end up better off. As inefficient producers, they would determine early in their endeavors that their resources are valued higher when put to uses outside the realm of Government contracting, uses which may be of greater benefit to society. However, within the context of their immediate business relationship with the Government, they would be worse off if the Government canceled the programs.

So it is with all of the programs. Because their main purpose is to implement political policy, they are designed to improve the lot of one party, small business, while purposely making another party worse off, namely the Government. Any attempt to modify these programs, without actual compensation to the losing party, results in someone being worse off. Hence, Pareto improvement is not possible.

However, another notion of efficiency, known as the Hicks-Kaldor criterion, permits *theoretical* improvement. Hicks-Kaldor holds that (a) if a mythical reimbursement could be made (but wasn't), and (b) if the gains from the transaction net of the reimbursement are still positive, then efficiency is possible. Unfortunately, the only way to see improvement in the Government's social regulation

efforts is by applying Hicks-Kaldor, meaning any improvement in efficiency is theoretical in nature only.

IV. COST ACCOUNTING STANDARDS

A. HISTORY

The establishment of Cost Accounting Standards (CAS) can be directly traced to Congressional testimony given by Admiral Hyman G. Rickover, the "father of the nuclear navy."[Ref 31] The year was 1968 and Congress was debating whether it should extend the Defense Production Act. Rickover asserted to Congress that it was almost impossible to determine the amount of profit in a given contract due to differing treatments of contract costs. He encouraged Congress to develop and adopt a system to uniformly measure and control costs on defense contracts.[Ref 5: p.4]

Congress then conducted hearings to determine the feasibility of developing and implementing a uniform set of cost accounting standards. Upon concluding the hearings, Congress did not begin legislation to develop a set of cost accounting standards but directed the General Accounting Office (GAO) to conduct its own feasibility study for establishing uniform accounting principles.[Ref 5: p.5]

In a January 1970 report, GAO stated its belief that establishing such standards was feasible and recommended doing so. In that report, GAO listed 13 potential benefits

to adopting a consistent and uniform set of cost accounting principles, including:

- Standards would ensure costs on a given contract were reported on a consistent basis and were comparable to the costs as originally proposed;
- Standards would help defense contractors in preparing and reporting cost information;
- Standards would improve communications between the Government, Congress, and industry;
- Standards would (nearly) eliminate differences in what constitutes acceptable cost accounting practices in Government contracting.
- Standards would provide a safeguard against windfalls or increased profits due to changes in cost accounting practices.[Ref 16: p.53]

Later that same year, Congress passed legislation establishing a Cost Accounting Standards Board (CAS Board.) The CAS Board was told to devise cost accounting standards that would

> ...achieve uniformity and consistency in the cost accounting practices followed by prime contractors and subcontractors in estimating, accumulating, and reporting costs under certain negotiated prime and subcontract procurements.[Ref 1: p.5-20]

Additionally, the CAS Board was charged with devising regulations which would require contractors, as a condition of doing business with the Government, to

- Document, in writing, their method of cost accounting, and
- Agree to adjust (presumably downward) the contract price if the Government found they had violated CAS requirements or inconsistently applied cost accounting standards.[ibid]

In carrying out the duties prescribed to them by Congress, the CAS Board developed and implemented 19 separate CAS standards, as well as various instances in which they did not apply and where waivers were applicable. In 1988, Congress again passed CAS related legislation, this time establishing a new and independent CAS Board, consisting of the Administrator of the Office of Federal Procurement Policy (OFPP), a representative from both the Department of Defense (DoD) and the General Service Administration (GSA), and two private sector representatives.[Ref 39: section 422] Further, the legislation gave the new Board the power to "make, promulgate, amend, interpret, and rescind cost accounting standards…."[ibid]

B. CAS REQUIREMENTS

In its present incarnation, CAS consists of 19 cost accounting standards, beginning with CAS 401 and ending with CAS 420 (CAS 419 does not exist.) The standards fit into one of three general categories:

- Overall cost accounting
- Categories/classes/elements of cost
- Indirect cost pools.

Table 4-1 lists each standard and the subject matter with which each is predominantly concerned.

CAS, as currently enforced, applies to all negotiated contracts (both prime contracts and subcontracts) exceeding $500,000, unless waived or exempted. The CAS Board has established what is essentially a dual-tiered system for CAS "coverage". **Full coverage** applies to any contractor business unit which receives either

- A single CAS covered contract greater than or equal to $25 million, or
- An aggregate of $25 million in CAS covered contracts in the preceding accounting period - if at least one of those contracts was larger than $1 million.

When a contractor is subject to full coverage, he must comply with all 19 CAS requirements. Additionally, once a

Table 4-1

COST ACCOUNTING STANDARDS

STANDARD	SUBJECT
CAS 401	Consistency in Estimating, Accumulating, and Reporting Costs
CAS 402	Consistency in Allocating Costs
CAS 403	Allocation of Home Office Expenses
CAS 404	Capitalization of Tangible Assets
CAS 405	Accounting for Unallowable Costs
CAS 406	Cost Accounting Period
CAS 407	Use of Standard Costs for Direct Material and Direct Labor
CAS 408	Accounting for Costs of Compensated Personal Absence
CAS 409	Depreciation of Tangible Capital Assets
CAS 410	Allocation of Business Unit G&A Expenses to Final Cost Objectives
CAS 411	Accounting for Acquisition Costs of Material
CAS 412	Composition/Measurement of Pension Cost
CAS 413	Adjustment/Allocation of Pension Cost
CAS 414	Cost of Money as an Element of Cost of Facilities Capital
CAS 415	Accounting for the Cost of Deferred Compensation
CAS 416	Accounting for Insurance Costs
CAS 417	Cost of Money as an Element of the Cost of Capital Assets Under Construction
CAS 418	Allocation of Direct and Indirect Costs
CAS 420	Accounting for Independent Research and Development Costs (IR&D) and Bids and Proposal (B&P) Costs

contractor reaches the full coverage threshold, all of his *ensuing* non-exempt contracts are also subject to full coverage.

By contrast, **modified coverage** is applied to a contractor business unit when it receives a CAS covered contract but has not reached the threshold for full coverage. For example, modified coverage is applied to a contractor who is awarded a non-exempt contract of over $500,000 but didn't hit the $25 million threshold in the previous accounting period or, if he did, didn't receive a single contract award over $1 million. Further, he cannot have exceeded the $25 million threshold in the current accounting period.

Modified coverage means the contractor has to conform only with CAS 401, 402, 405, and 406. Further, like full coverage, once a contractor has been awarded a contract subject to modified coverage, that coverage is extended to all of his subsequent CAS covered contracts in the accounting period. However, should the contractor receive a contract subject to *full* CAS coverage, he is then subject to full coverage for any CAS covered contracts he receives in the remainder of the accounting period.

1. Exemptions

Congress has given the CAS Board authority to exempt certain classes and/or categories of contracts and subcontracts from CAS requirements.[Ref 39: section 422] The CAS Board has exempted these contracts and/or subcontracts from CAS:

- Sealed bid
- Negotiated contracts less than $500,000
- Contracts with small businesses
- Contracts with foreign governments and/or their agents
- Contracts where price is set by law/regulation
- Firm fixed-price (FFP) and firm fixed-price with economic price adjustment (FFP-EPA) for purchase of commercial items
- Contracts with a United Kingdom contractor for work performed substantially in the United Kingdom (under certain conditions)
- Subcontracts under the NATO PHM ship program, performed outside the United States by a foreign entity
- Contracts/subcontracts executed and performed entirely outside the United States

- FFP contracts/subcontracts awarded without submission of cost data.

2. Waivers

The CAS Board also has the power to grant waivers from CAS requirements with respect to individual contracts and subcontracts.[ibid] To gain a waiver, however, the agency Contracting Officer seeking the waiver must provide, in writing, the following information:

- Description of the contract/subcontract
- Statement attesting that the contractor refuses to accept the contract containing the CAS clause and the reason he refuses
- Whether the same contractor has accepted previous CAS covered contracts
- Amount of the contract and the aggregate dollar amount the same contractor has had in the previous three years
- Statement that no other source of supply is available to fill this particular need
- Alternative sources to meet the need the agency considered prior to requesting the waiver
- The agency's plan to fill this need in the future so the waiver will not become recurring.

3. Disclosure Statement

Under full CAS coverage, contractors are required by the CAS clause, unless specifically exempted, to file a disclosure statement that describes their cost accounting practices. Additionally, they must agree to:

- Follow those practices in estimating, accumulating, and reporting their costs
- Comply with all of the CAS in effect on the date of contract award
- Adjust the contract price if they fail to do either of the above.

The contractor submits his disclosure statement on Form CASB-DS-1, described by Arnavas and Ruberry as a "lengthy document."[Ref 1: p.5-24] The sample form is approximately 40 pages in length but encourages the use of continuation sheets where necessary. Additionally, if the contractor is required to submit a disclosure statement, he must submit a *separate* disclosure statement for each segment (business division) of his company whose costs are included in the contract, where those costs are greater than $500,000 (unless exempted.) In other words, the contractor must separately document the cost accounting practices for each segment of his company participating in the contract if the segment's costs are over $500,000.

C. CAS: COST/BENEFIT ANALYSIS

1. Benefits of CAS

As mentioned previously, in 1970 GAO cited 13 potential benefits to adopting a CAS system and recommended doing so based upon those potential benefits. Not all of those benefits have come to fruition - it would be difficult to argue, for example, that CAS has "...minimize[d] subsequent controversy in the administration and settlement of the contract."[Ref 16: p.45] CAS does provide the Government with some advantages, however, although many of the advantages are theoretical rather than quantifiable.

- ***Provides monetary gain.*** DCAA estimated it recovered approximately $138 million in CAS covered contract adjustments in FY97 and the first half of FY98, for a pro-rated recovery average of about $90 million a year.[Ref 5: p.20] These adjustments are brought about by the CAS disclosure statement requirement for the contractor to accept a contract adjustment for CAS non-compliance and/or deviations from stated cost accounting practices.
- ***Its mere existence prevents abuse.*** CAS as a deterrent is easier to understand as a concept than to prove in practice. Since contractors are essentially forced to disclose their cost accounting

practices and are not allowed to deviate from them without potential contract adjustment, it's fairly obvious that CAS may act to prevent deliberate contractor cost accounting abuse. For example, CAS reduces the likelihood a contractor can purposely manipulate overhead costs to shift them from commercial contracts to Government contracts.

- ***Streamlines audit procedures.*** Because CAS provides a regulatory framework for cost accounting practices, Contracting Officers and auditors can spend less time deciphering methods of cost allocation and more time performing post-award administrative functions. And, because of the requirements of the disclosure statement, it does provide the Government with early identification when the contractor intends to change his cost accounting practices. Without CAS, any changes may not be discovered until an audit.

CAS presents the Government with other perceived benefits as well. In a 1995 Acquisition Reform Steering Group report, DoD stated that CAS:

> increased uniformity and consistency in accounting practices,…increased equity to all concerned,…simplified contract negotiation, administration, and settlement procedures,…[and provided] more reliable cost data. [Ref 10: p.7-1]

2. Costs Related to CAS

One would expect CAS, as a program designed to influence behavior within the market for defense goods, to entail costs consistent with its regulatory nature. Not surprisingly, these costs are quite similar to those outlined in Chapter II as pertaining to regulation in general. For example, embodied within the following paragraphs detailing the cost of CAS compliance is the aspect of burdensome administration.

As with the benefits described earlier, some of the costs are quantifiable, while others are theoretical, if not intuitive.

- ***CAS is expensive.*** CAS adds to the cost of doing business in that many companies must either create or add to their existing accounting staff and/or procedures to ensure compliance. Additionally, they must devote resources to filing and maintaining disclosure statements, participating in Government audits designed to oversee compliance, and negotiating disputes over CAS interpretation. Commercial accounting practices center around Generally Accepted Accounting Principles (GAAP) and CAS requirements are not necessarily subsumed in GAAP. In 1994, Coopers & Lybrand conducted an independent study to determine

the cost of DoD regulation. The results showed that, overall, DoD regulation resulted in an 18% cost premium (over the value added cost of the contract) to the Government. Material costs were deemed to be 40% of the contract cost, meaning 60% of the contract cost was "value added." Of that, 0.7% was attributed to CAS.[Ref 4: p.37] According to information provided by Danielle Brian, Executive Director of the non-profit, non-partisan *Project on Government Oversight* (POGO), cost based Government contracting comprises about $125 billion a year, of which roughly 60% ($75 billion) is cost reimbursement.[Ref 3: p.1] Further, DCMC and DCAA analyzed the CAS contract universe from the period April 1997 through March 1998 and determined the dollar figure to be roughly $72 billion dollars.[Ref 5: p.354) Applying the Coopers & Lybrand template to the CAS contract universe, CAS would add ($75 billion) X (60% value added) X (.7% CAS premium) or approximately $315 million per year to the cost of Government contracting.

- ***CAS restricts competition in the market.*** Congress recognizes the importance of competition in the market for defense goods and services - it has even attempted to legislate it via the Competition in Contracting Act

(CICA) of 1984. Yet the competition Congress wishes to encourage is undermined by the requirement for CAS coverage, which limits awards of CAS covered contracts to the **one percent** or so of all American corporations that are CAS compliant. CAS further limits competition in that many companies refuse to accept CAS covered contracts. Paul Lindahl of the Government Controllers Department of the 3M Company, for example, characterizes CAS as "very costly, administratively burdensome, and inconsistent with a primarily commercial company."[Ref 22: p.2] As a result, 3M, a leading R&D oriented company with over $1 billion in R&D sales per annum, sells less than 5% of that cutting edge technology to the Government.[ibid] W.L. Gore and Associates is another high technology firm (albeit privately held) that sells a diverse line of products. After researching the implications of CAS it decided that

> ...a CAS compliant system added no value to its accounting for its predominantly commercial business, that it would increase costs and risks and would involve considerable expense to integrate with its accounting systems.[Ref 22: p.1]

- After conducting their research of CAS, Gore and Associates declined to pursue any Government business requiring compliance with CAS.[ibid] The management of Dow Corning has made a conscious business decision

to limit its Government business to dollar amounts less than that requiring full CAS coverage. While Dow Corning is not fundamentally opposed to doing business with the Government, the management team has decided the cost of full CAS compliance far outweighs the incremental revenues these contracts would generate for the company. The same policy holds at 3M.[ibid]

- ***CAS limits flexibility for Government/industry.*** CAS limits flexibility and the potential for cost savings in a rapidly changing and increasingly competitive global market. For example, the lengthy administrative process, and stringent requirements, for requesting a simple waiver must be approved at the CASB level. Because of this, the CASB has averaged only 1.4 waiver requests per year over the last 10 years, thus limiting an agency's flexibility in filling requirements at reduced cost when it is confident specific accounting practices are not an issue.[Ref 5: p.364] For example, Eastman Kodak Company doesn't charge corporate R&D costs to any of their Government contracts, even though it could under CAS 420.[Ref 13: p.3] One reason they don't is to avoid the potential adverse impact their corporate R&D effort may experience if subjected to Government audit

and oversight. And, Kodak admits, the corporate system they use is not CAS compliant. Yet, even though the specific agency knows that Kodak doesn't charge R&D under CAS 420, it is powerless to exempt Kodak from CAS 420. Therefore, the Government continues to expend resources performing CAS 420 audits on Kodak, even though the Government is being charged less than they would be if Kodak complied with CAS 420.[ibid]

CAS further limits flexibility because many companies, because of the differing accounting practices, establish separate business segments solely for the purpose of conducting Government business. That practice is counter to DoD's recent efforts to achieve cost savings through "Commercial-Military Integration" (CMI). Firms do not have, or choose not to have, the flexibility to co-produce like items in one division, thus achieving economies of scale in production. Instead, they segregate their commercial and military business segments, to comply with CAS where mandated but to otherwise avoid the additional costs involved with CAS. A 1996 GAO report found, for instance, a 1994 DoD/TRW project achieved 30-50% cost savings when

the goods were manufactured in the commercial facility rather than in the military segment.[Ref 16: p.7]

3. CAS in Practice: Eastman Kodak Company

In 1997, Eastman Kodak Company, located in Rochester, NY, had sales of about $15 billion, approximately $150 million of which were generated from the Commercial and Government Systems division.[Ref 13: p.1] This division is the only division within Kodak that must comply with CAS and is subject to full coverage requirements. According to Stanley Fry, Division Manager, his division requires double the number of accounting staff as a comparable Kodak commercial division with twice the sales of Mr. Fry's division.[ibid] Obviously, this cost is passed along to the Government in the form of higher overhead and G&A rates.

CAS affects direct costs in the division as well. In Kodak's commercial divisions, the cost to process an expense report is a dollar or two. In Mr. Fry's division it is over $20 due to the extra review and handling required to comply with CAS (and FAR) requirements.

CAS presents some inefficiencies for Kodak's business practices as well. For example, Kodak recently considered combining some functions within the division that would "streamline,...improve efficiency, and probably result in

lower overall cost to the [G]overnment."[ibid] However, Kodak has not done so because it would involve moving costs between contracts and CAS may impose monetary penalties upon Kodak for doing so. Kodak also has commercial segments that refuse to do business with the CAS covered division because of the audit and oversight costs involved in doing so. Indeed, although Kodak's Government business has decreased by nearly 40% in the last 10 years, the number of Government auditors assigned to Kodak facilities has remained relatively constant. According to Fry, the reality of CAS administration is that it is

> ...used to reduce cost to the [G]overnment by disallowing otherwise allowable cost or placing such a burden on a contractor that cost is withdrawn.[ibid]

D. ANALYSIS FOR PARETO IMPROVEMENT

CAS, while providing some benefit to the Government, is clearly *not* a Pareto optimum scenario. One very simple, albeit superficial, answer is to scrap the entire program. After all, as illustrated above, the Government is spending approximately $315 million per year (and losing business with cutting edge technology firms who decline to participate because of CAS.) Meanwhile, the Government is documenting savings of only $138 million over the course of 18 months (plus any cost avoidance related to the perceived "threat" of CAS audits.) However, because it is likely

that CAS does provide some deterrent effect, and because it is politically infeasible to discontinue the entire program, other alternatives will be examined. (These alternatives are not intended to be cumulative in nature unless otherwise noted.)

1. *Move the Waiver Authority to a Lower Level*

One very simple way to improve this market would be to move the waiver approval level down from the CAS Board itself to the agency level, saving time and resources for both Government and industry, in both operational and administrative cost.

Using Kodak's experience with CAS 420, if the agency involved had the authority to waive a standard or a contract, the agency or Contracting Officer could waive CAS 420 for Kodak. The Government could stop devoting resources to audit an accounting practice in which Kodak freely chooses not to participate. As it stands now, Kodak's request for waiver would be processed from Kodak, to the agency, then up to the CAS Board, subject to review along the way. It would also occur *each time* Kodak wished to request the same waiver, just applied to a different contract. One can easily see the potential for duplication of effort and a substantial administrative cost. The average CAS waiver request over the last 10 years has taken

about 138 days from requestor to CAS Board decision.[Ref 5: p.364]

Moving authority for CAS approval to the agency level results in Pareto improvement by lowering administrative costs, decreasing time between request and decision, and allowing for multiple applications of a single waiver in like circumstances.

A potential argument against moving CAS down to the agency level is that doing so would create an unfair advantage for those contractors receiving waivers. In theory, these contractors would experience lower costs as a result of receiving a waiver and eliminating some of the cost of CAS.

The rebuttal to that argument, of course, is that the same situation exists today, albeit at a different level. A contractor may now receive a waiver, from the CAS Board, giving it the same cost advantage. Moving the waiver authority to a lower level would simply speed the process and, when contractors see the potential for cost savings through pursuing waivers, incentivize more contractors to implement similar business strategies to obtain waivers themselves. All of this, naturally, results in lower cost and better prices for the Government. Further, the same system for protesting contract actions remains available to

those who feel they have been unfairly treated by the Government. (Author's note: The FY 2000 Defense Authorization Act, enacted 1 October 1999, moved this authority to the agency level for contracts less than $15 million.)

2. *Decrease the Number of CAS Requirements*

As noted above, the 19 CAS requirements cost approximately $315 million per year. Assume, for lack of evidence to the contrary, each requirement consumes an equal amount of resources - therefore, for each CAS requirement eliminated, the Government and industry would share in savings of just over $16 million per year. The problem lies in determining which requirements should be eliminated.

The General Accounting Office (GAO) CAS Board Review Panel conducted a comparison of CAS and the Federal Acquisition Regulation (FAR) part 31, Cost Principles, and determined there are a number of similarities, if not significant duplication. The FAR, of course, is the basic set of regulations that governs procurement by all Federal Government agencies. It sets forth the uniform policies, procedures, and rules for Government procurement of goods and services using appropriated funds.[Ref 1: p.2-9] The FAR is a "group project" of sorts, as its administrative

upkeep is the responsibility of the heads of GSA, NASA, and the Secretary of Defense. Because an agency cannot deviate from FAR procedures with the approval of a designated official, it's not a risky statement to say nearly every Federal Government procurement is made in accordance with the FAR or one of the agency regulations authored to specifically implement the FAR.

The comparison between CAS and FAR part 31 shows five CAS standards are incorporated by reference into FAR part 31, four standards have substantial duplication in FAR part 31, eight standards are significantly different, and one standard is not related. The remaining standard relies on GAAP.[Ref 5: p.106]

Comparison with FAR	**Number**
Incorporated by reference (CAS 412, 413, 414, 415, 417)	5
Substantial duplication (CAS 402, 405, 416, 420)	4
Difference or FAR generally addresses (CAS 403/4, 406/7, 409/10/11/18)	8
Not related (CAS 401)	1
Relies on GAAP (CAS 408)	1

At first glance, it would appear the path of least resistance to Pareto improvement lies in eliminating the

CAS standards incorporated by reference into FAR part 31. After all, the requirements are duplicated and eliminating the CAS version would partially eliminate the cost of the CAS accounting framework. However, upon closer inspection this is not the case. What GAO fails to mention, and what becomes apparent upon independent verification, is that in addition to incorporating the *requirements* of the specified CAS standards, FAR part 31 also incorporates the requirement to maintain the exact same accounting system specified in CAS for each of those requirements. For example, in FAR 31.205-10, the section incorporating CAS 414 reads, in part,

> …is allowable if…contractor's contract investment is measured, allocated to contracts, and cost in accordance with 48CFR9904.414…the contractor maintains adequate **records to demonstrate compliance with the standard**….
> [Ref 12: part 31]

The key to Pareto improvement lies in identifying CAS coverage that is duplicated in FAR part 31 but where the CAS accounting framework need not be duplicated. According to GAO, the requirements of CAS 402 are "duplicated in FAR 31.202…and FAR 31.203."[Ref 5: p.108] As such, the Government would still have the FAR coverage if it eliminated CAS 402, essentially the same coverage as CAS 402. However, the FAR text makes no mention about maintaining a separate accounting system to prove

compliance. This is roughly analagous to providing the contractor with a performance specification. In other words, the Government specifies what needs to be accomplished (in this case compliance with the FAR Part 31) but does not tell industry *how* to do it. The Government thus gives industry the freedom of choice to ensure compliance in the most efficient manner.

The GAO study offers the same observation concerning CAS 405, citing its duplication in FAR 31.201-6.[ibid] And, although some aspects of CAS 416 aren't *exactly* the same as FAR 31.205, with respect to the minor differences, the GAO authoritatively states

> FAR 31.205-19 does not address the treatment of purchased insurance and thus would follow GAAP requirements. The GAAP requirement for various types of insurance policies that can be purchased are too numerous to list. However, the general principle that underlies the specific accounting treatment for each of these policies is similar to the CAS 416 requirement….[Ref 5: p.113]

With FAR Part 31 providing essentially the same guidelines as CAS 402, 405, and 416, these requirements duplicate existing regulation and, as a non-"value-added" administrative cost, should be discontinued.

In addition, CAS 406 addresses, in essence, the specifics as to what is defined as an accounting period (generally a fiscal year.) FAR 31.203 addresses what constitutes the base period for allocating indirect costs and that, too, is generally the contractor's fiscal year,

with some additional qualifications.[Ref 12: part 31] With minor administrative adjustments to the FAR, the Government could also eliminate CAS 406 and retain like coverage.

Eliminating those four CAS requirements would achieve Pareto improvement. The Government, through the coverage provided by FAR part 31, would achieve in principle the exact same degree of risk mitigation and it would be roughly $64 million better off per year. (Assuming industry passes along to the Government, through its cost reimbursement contracts, nearly all of the costs of CAS.) Industry's position would remain relatively unchanged, as they would still be responsible for complying with the requirements of the FAR. *Now, however, the duplicate requirements of CAS have been eliminated, thereby (partially) eliminating the need for a separate CAS accounting infrastructure to track those specific CAS requirements, the costs of which are passed to the Government*. One could argue removing administrative requirements actually makes them better off as well in terms of management concern, oversight, filing space, employee morale, and other intangibles.

3. ***Raise the CAS Threshold to $100M***

DCAA and DCMC performed a somewhat complicated analysis involving a potential "trigger mechanism"

necessary to invoke CAS.[Ref 5: p.362] Using those data to estimate the effects of raising the threshold for full CAS coverage, but disregarding the trigger gimmick, the Government can retain some measure of CAS coverage on 99% of current CAS covered pricing actions by **quadrupling** the CAS threshold to $100 million. It also retains some measure of CAS coverage on 100% of total CAS awards by doing the same. In fact, it would retain **full** CAS coverage on a whopping 88% of all the CAS awards now subject to full coverage, while only 12% of those dollars would migrate to modified coverage.[ibid]

However, by doing so, the number of contractors subject to full CAS coverage declines by 57%, significantly reducing the cost of doing business with the Government. [ibid] While this would immediately create a cost advantage to those contractors who now fall below the new threshold, this is not the first time the Government has raised thresholds. (It also did so in 1993.) And, since CAS relies upon accounting periods to determine the threshold, the higher threshold could be introduced at the beginning of an accounting period to essentially start each contractor out on equal footing.

Pareto improvement is achieved as the Government retains a modicum of CAS coverage on all of the awards and

99% of the pricing actions. Its position is relatively unchanged with respect to current coverage but is improved when one considers an increase in the CAS threshold is likely to produce benefits realized by the increase in market entrants and thus competition.

Industry, meanwhile, sees an immediate improvement in its position due to the 57% decrease from full to modified coverage. (Author's note: The CAS Board Review Panel, in studying the same data, recommended a "trigger mechanism" of $7.5 million - in other words, CAS coverage will not apply to non-exempt contracts unless a contractor receives a contract in excess of that amount. Further, they recommend increasing the threshold to $50 million, which slightly compounds the effect of the trigger. By their analysis, this will result in "only" 97% of contracts retaining some form of CAS coverage, a loss of two to three percent.[ibid])

4. *Eliminate Modified CAS Coverage*

This is by far the least likely scenario but worth discussing simply because it would attract a lot of attention, resulting in new entrants to the market. In subparagraph (2), above, four CAS requirements became candidates for elimination because they duplicate existing regulation, among them CAS 402, 405, and 406. Keeping in

mind that modified CAS coverage only pertains to CAS 401, 402, 405, and 406, and suddenly only CAS 401 remains as an obstacle to eliminating modified CAS coverage.

In comparing CAS with GAAP, GAO observed that "five of the 19 standards (**CAS 401**, 407, 408, 411, 417) do not significantly differ from GAAP."[Ref 5: 106] While this is not entirely accurate (CAS 401 discusses consistency in estimating contract costs while the applicable portions of GAAP discuss consistency in financial reporting) the statement remains a stated Government position and thus valid for concept exploration. Assuming the Government is willing to accept, in theory, a modified form of GAAP in place of CAS 401, the final obstacle to removing modified CAS coverage is removed.

Modified CAS coverage accounted for about $2 billion, according to DCAA, or approximately 2.8% of all CAS covered awards.[ibid] Given that the annual cost of CAS has been estimated at $315 million, eliminating modified CAS coverage could potentially save the Government $8.8 million per year in CAS related costs. Obviously, industry's position is also much improved (due to the markedly fewer administrative requirements) and Pareto improvement is achieved.

However, adopting this scenario could potentially lead to even greater Pareto improvement. Eliminating modified coverage would positively lead to firms entering the Government market, thus increasing competition. Further, any assimilation with GAAP could result in some of the audit and oversight associated with full CAS coverage being contracted out to private industry. That would, in turn, lead to even greater potential cost savings as the Government's own audit and oversight communities required fewer resources.

Unfortunately, it's very difficult to envision implementation of this scenario and very unlikely it would ever see fruition. The entire foundation of the hypothesis is GAO's observation that CAS 401 does not differ greatly from GAAP. Further, it assumes the Government would be willing to accept a modified form of GAAP in lieu of CAS 401. In reality, this is highly unlikely to occur for the following reasons.

First, despite GAO's stated position, CAS 401 deals with cost accounting practices while GAAP is concerned with financial accounting practices. GAAP does not begin to discuss allocation of costs in the manner described by CAS 401. Second, eliminating modified CAS coverage leads to a significant loss of control by the Government over the

contracting process, a loss of control to which it is nearly impossible to assign a dollar value. Finally, given Kodak's experience, the Government has historically proven reluctant to downsize its oversight and audit community, thus partially negating any benefits incurred by eliminating the requirement for modified CAS coverage.

E. SUMMARY

In 1970 Congress passed legislation establishing the Cost Accounting Standards Board and exhorted it to implement methods by which the Government could be assured of uniformity and consistency in cost accounting practices. The Board devised the 19 standards known today as CAS. CAS applies to Government negotiated prime contracts and subcontracts over $500,000, although certain types of contracts are exempt.

CAS is a two-tiered system consisting of full and modified coverage. Full coverage applies when a contractor receives a single contract over $25 million or has received a cumulative $25 million in contracts in the preceding accounting period, one of which exceeded $1 million. Modified coverage essentially extends to contracts under those thresholds.

CAS provides some benefits to the Government, namely it provides some monetary gain, it may have a deterrent

effect on contractor accounting abuses, and it assists Government auditors in more easily executing their duties. However, it has costs as well: CAS is administratively burdensome, it is rather expensive, it restricts competition, and it limits flexibility in the market. Eastman Kodak Company provided examples of how CAS can have a deleterious effect on the Government market participants.

Four potential areas of Pareto improvement within the CAS realm were suggested, including moving the waiver authority to a lower level, reducing the number of standards, raising the CAS threshold, and eliminating modified coverage completely. However, for various reasons, it is unlikely the Government would realize serious benefits from eliminating modified CAS coverage and that scenario is not likely to occur.

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V. CERTIFIED COST OR PRICING DATA

A. HISTORY

The requirement for the Government to obtain certified cost or pricing data is embedded in legislation passed by Congress in 1962 and known as the *Truth in Negotiations Act* (TINA). The roots of TINA, however, date back to the late 1950s, when the General Accounting Office (GAO) found fault with the Air Force in a number of its negotiated procurement contracts. In GAO's opinion, the Air Force allowed windfall profits in those contracts because it did not have full access to the contractors' cost and pricing data.[Ref 27: p.470]

The Air Force, wanting to fend off the criticism and avoid Congressional involvement, changed its own acquisition regulations to require cost and pricing data. In October 1959, the Department of Defense (DoD) made the requirement DoD-wide by amending the Armed Services Procurement Regulation (ASPR) (the precursor to the Federal Acquisition Regulation or FAR) to require submission of certified cost and pricing data in negotiated contract situations.[ibid]

Congress, apparently not impressed by the move, mulled over legislation to require certified cost and pricing

data, causing DoD to expand and strengthen regulations on subcontractor certified cost and pricing data.[ibid] DoD argued its regulations required the exact same data Congress wished to legislate into being and the Comptroller General at the time notified Congress he would not be able to make recommendations to Congress until he had some time to gauge the effects of the new regulation. Congress relented but concluded that "[m]ost if not all of the procurement problems in the Department of Defense can be solved administratively."[Ref 27: p.471-472]

In March of 1961, Congressman Herbert introduced H.R. 5533 which, as before, was met with resistance by DoD. [Ref 26: p.16] The DoD general counsel, Cyrus Vance, argued for flexibility, pointing out that a statute wasn't practicable since regulations were easier to modify as circumstances changed.[Ref 27: p.470] While the House Armed Services Committee ended up passing the bill, three minority members did publish a dissenting opinion. They opined that while it was the responsibility of Congress to ensure DoD's regulations were followed to the letter, they preferred to allow the Secretary of Defense to use his authority to manage his agency in the most efficient manner possible i.e. without Congressional oversight.[ibid] Congressman Herbert's bill passed easily, however, when a

GAO report illustrated that many Army and Navy negotiations were conducted without the certified cost and pricing data. In other words, the services were not enforcing their own regulations.[ibid]

The bill was forwarded to the Senate and approved in August of 1962 with one major change from the House version. The original bill called for submission of certified cost and pricing data for incentive type contracts only. The Senate, fearful of merely shifting the current procurement problems from one contract type to another, expanded coverage to all types of negotiated procurements.[Ref 26: p.17]

The amended bill was passed into law the next month and became effective in December 1962. The final version of Public Law 87-563 is known as the Truth in Negotiations Act (TINA) and it has been amended four times since being established.[ibid] The purpose of TINA was to

> ...put the Government on an equal footing with contractors in contract negotiations by requiring contractors to provide the Government with cost or pricing information relevant to the expected cost of contract performance. [Ref 1: p.5-28]

B. PROGRAM REQUIREMENTS

1. *Definition*

Understanding the requirements pertaining to the certified cost or pricing data issue in TINA is

dependent upon first defining what is meant by the term itself. The TINA requirements, as incorporated into the FAR, define "cost or pricing data" as

> ...all facts that, as of the date of agreement on the price of a contract (or the price of a contract modification), a prudent buyer or seller would reasonably expect to affect price negotiations significantly. [Ref 12: part 15]

Not only are contractors and subcontractors required to submit the data, but they are also required to certify that, to the best of their knowledge and belief, the data they have submitted is current, accurate, and complete. Thus, the term *certified cost or pricing data* is born and, as required by the FAR, is documented by the contractor on a Certificate of Current Cost or Pricing Data. [Ref 12: part 15]

2. *Applicability*

The contractor or subcontractor must provide certified cost or pricing data in the following contractual instances:

- When the dollar value of a negotiated contract is expected to be greater than $500,000.
- When the dollar value of a negotiated or sealed bid contract involves an adjustment of greater than $500,000.

- When the dollar value of a subcontract is greater than $500,000, if the prime contractor is required to submit the data.
- When the dollar value of a modification to a subcontract is over $500,000.
- When the Head of Contracting Activity determines, in writing, submission is necessary for the Government to determine whether a price is fair and reasonable, for contracts between $100,000 and $500,000.

[Ref 1: p.5-28]

3. *Exemptions and Waivers*

Contractors and subcontractors are exempted from TINA in four situations:

- When the price is based upon **adequate price competition**. This occurs if the Government solicits offers *and* two or more responsible offerors, who can meet the Government's requirements, compete for the contract *and* the two offerors act independently of each other.
- When the price is **set by law or regulation**. Self-explanatory.
- When buying a **commercial item**. As long as the item being purchased meets the FAR definition of a

commercial item, certified cost or pricing data isn't required.

- When a **waiver** has been granted. According to the FAR part 15-403, the Head of the Contracting Activity may:

> ...without power of delegation, waive the requirement for submission of cost or pricing data in exceptional circumstances...The HCA may consider waiving the requirement if the price can be determined to be fair and reasonable without submission of cost or pricing data.[Ref 12: part 15]

4. Audits

For contractors who are required to submit certified cost or pricing data, the Government has two separate authorities by which it may audit those contractors to verify the data. The first avenue is via the "Audit-Negotiation" clause included in the contract itself, which allows the Government to audit all books and records that pertain to the negotiation, pricing, and/or performance of the contract.[Ref 1: p.5-38] The clause, as specified in FAR part 52-215, states the Government has the right to examine and audit all of the contractors' records, including computations and projections, as they relate to

- the proposal for the contract or modification;
- the discussions surrounding the proposal;
- the actual pricing of the contract itself;
- the performance of the contract.[Ref 12: part 52]

The only reason the Government may audit the contractors' books, under this clause, is to verify the certified cost or pricing data.[Ref 1: p.5-38]

Further, one of the provisions of TINA itself allows the Government up to three years after final payment on the contract to conduct audits to verify whether the certified cost or pricing data was current, accurate, and complete. If, during the audit, the contractor cannot provide adequate documentation to support its invoiced costs, it may have to refund a portion of the contract price. [ibid]

C. COST OR PRICING DATA: COST/BENEFIT ANALYSIS

1. *Benefits of Certified Cost or Pricing Data*

The requirement under TINA for contractors to submit certified cost or pricing data is intended to reduce the risk the Government has when the market provides inadequate competition. Understandably, then, the requirement results in certain direct and indirect benefits to the Government in its negotiations with contractors.

- ***Provides leverage in negotiations.*** By submitting certified cost or pricing data to the Government, the contractor is essentially opening its books to Government inspection. Since the Government knows the cost basis upon which the contract will be

based, it can negotiate more effectively, essentially by offering a profit or fee on top of the actual cost. In other words, absent the forces of supply and demand, the contractor cannot seek a "market level" of profit since the Government, as the market, has access to the actual cost structure and is unwilling to pay more than actual cost plus profit/fee. Further, the contractor is required to update the data whenever an element of the cost structure changes. For example, assume the contractor certifies data as current, accurate, and complete at the time of the initial proposal. If the contractor subsequently discovers a new method for reducing costs prior to the "handshake" agreement on price, he is required to disclose that savings to the Government. The Government, then, is able to realize the gain from that improved cost structure.

- ***Deters overpricing.*** One of the key requirements of TINA, linked to certified cost or pricing data, is the liability the contractor incurs in cases of "defective pricing." The defective pricing contract clause states, in part, that if "any price…was increased by a significant amount" (including profit

or fee) because the contractor submitted data that was not current, accurate, or complete, then the contract price and/or cost "shall be reduced accordingly."[Ref 1: p.5-36] Further, the Government is entitled to interest on the price adjustment on overpayments of any significant amount when the defective data caused the higher price. (This means the Government had to *rely* on the defective data in formulating the contract price.) Even more ominous, if the Government can prove the contractor knowingly or intentionally submitted defective pricing data, the contractor is liable for much stiffer penalties. Normally the Government seeks a fine equal to the amount of the overpayment but may also file criminal charges against the contractor, resulting in prison terms or debarment from contracting with the Government.[ibid]

2. *Costs of Certified Cost or Pricing Data*

As discussed in Chapter II, Government intervention in markets normally entails specific costs, whether intended or not. The TINA requirement for submission of certified cost or pricing data follows that same model, adding certain identifiable costs to the Government contracting process.

- ***It's expensive.*** The expense associated with Government regulation is a common theme and pertains to certified cost or pricing data as well. The aforementioned Coopers & Lybrand study in 1994, studying the resultant cost premium as a function of DoD regulation, ranked the TINA requirements as the *number two* cost driver in Government contracting. [Ref 4: p.18] Specifically, the study attached a 1.3% cost premium to the value added portion of the contract. As with the cost premium associated with CAS in Chapter IV, to determine the dollar amount of certified cost or pricing data requires multiplying the total estimated dollar value of affected contracts by the .6 value added factor, then taking 1.3% of that amount. The Department of Defense, in June of 1995, did just that and arrived at an associated cost premium of $761 million per year.[Ref 10, p.2-2] About $500 million of this premium can be attributed to the financial systems and engineering/program management function. In the financial area, the contractor obviously has to develop a system for estimating his costs, devote resources to developing cost and pricing data (not to mention certifying that it's accurate), and

devote resources toward developing cost proposals. Further, he has to devote resources to any and all Government audits associated with the contract. From a program management standpoint, the contractor's personnel have to be certain their program's cost data are consistent with the cost estimating system the financial personnel developed and also must justify the cost associated with buying materials and services from subcontractors and suppliers.[ibid]

- ***It's administratively burdensome.*** The administrative burden aspect is a recurring theme in Government regulatory programs. It applies equally here. The contractor, in substantiating that his cost or pricing data is current, accurate, and complete, must maintain voluminous files of information. Not only is he responsible for documenting historical cost, but he must also be able to support the following:
    - Vendor quotes
    - Non-recurring costs
    - Information on changes in production methods and in production/purchasing volume

- Data supporting projections of business prospects and objectives and associated costs
- Unit cost trends (e.g. labor efficiency)
- Make-or-buy decisions
- Estimating resources to attain business goals
- Information on management decisions that could have a significant bearing on costs

[Ref 7: p. 14-104.3]

- ***It's repetitive.*** Remember that the Government requires the data to be certified as current, accurate, and complete as of the date of the "handshake" agreement on price. In many cases, then, the contractor must submit the data on three separate occasions: at the time of initial proposal, during actual negotiations, and when the contract is finally executed.[Ref 38: p.5] Each time the data must be submitted, the contractor has to devote resources to developing the cost proposal and any internal review procedures necessary to ensure accuracy.
- ***It limits sources of supply.*** Because of the expense involved and the administrative burden of the requirement, many companies prefer to eschew doing

business with the Government, rather than subject themselves to the requirements of TINA. In a rather odd twist, then, a requirement which is intended to protect the Government in instances where the market cannot provide adequate competition (more than one source of supply) may, in effect, discourage entrants into that same market.

D. ANALYSIS FOR PARETO IMPROVEMENT

That the requirement for certified cost or pricing data carries a cost premium is a point few would argue. By the same token, that the Government will always maintain the requirement, in some form or another, is another veritable certainty. Because the Government does have some unique requirements for which no other market exists, it will continue to have difficulty determining what is a "fair and reasonable" price for those items, particularly those items which are large, complex, and/or expensive.

For example, to expect an employee of the Government to use his own judgment to assess the price reasonableness of a space shuttle is difficult at best. First, the "asking price" would be in the hundreds of millions, if not billions, of dollars, a monetary figure so large the average middle class Government employee has no basis for comparison or, some would argue, even comprehension.

Second, even if the employee could put the magnitude of the price into context, the employee would have difficulty in determining whether that price constituted a "best value" for the Government. After all, who within Government actually determines the monetary worth of the scientific findings of the space program or national defense? Arguably the answer is Congress, through appropriations, although Congress does a lot of bulk funding of programs and leaves the negotiating details to the agency level.

For these types of items, then, cost-plus contracting is arguably the only course of action to determine what the Government should pay. The Government pays the cost of the program, plus a fair and reasonable fee, to receive its goods and/or services.

But because cost-plus contracting is unlikely to disappear, the Government's need to identify costs is likely to remain as well. Unlike Cost Accounting Standards (CAS) then, Pareto improvement cannot be achieved through wholesale deletion of requirements (albeit in CAS the requirements that should be eliminated are merely duplicate requirements adding incremental cost.) Instead, Pareto improvement lies in identifying *specific* areas for improvement within the realm of certified cost or pricing data requirements and taking advantage of those areas to

improve efficiency. The following suggestions for Pareto improvement identify those areas that may reduce the cost premium associated with certified cost or pricing data requirements.

1. *Expand the Use of Price-Based Acquisition (PBA)*

On 15 October 1998, the Under Secretary of Defense for Acquisition and Technology, Dr. Jacques Gansler, established a study group to analyze implementation of PBA within the Department of Defense.[Ref 37: p.1] In his memorandum directing the study, Dr. Gansler cited Section 912 of the fiscal year 1998 National Defense Authorization Act and spoke of the need to eliminate and/or reduce the differences in the way the Department of Defense procures goods and services and the way the commercial sector does so. Specifically identified by Dr. Gansler as potential candidates for improvement were CAS and certified cost or pricing data.[ibid]

Further, when stipulating the study objectives of the group, he directed the following:

> …determine how to price alternative solutions based upon market alternatives without requiring the supplier to justify its price based upon component costs of the goods or services being offered and without the need to use cost accounting standards. Determine how to track program progress and estimate future program costs without cost data and cost reports.[Ref 37: p.2]

Seven months before Dr. Gansler established the Study Group, the Defense Science Board Task Force on Defense Acquisition Reform, Phase IV reported its findings. In its report, the Task Force recommended publishing a policy making it clear that DoD policy "is to avoid using cost-based contracts unless no other alternative exists." [Ref 8: p.5] The Task Force identified three major deficiencies associated with cost-based contracting:

- Cost-based contracting discourages efficiency because it contains no incentives for the seller to reduce costs. They noted that, over time, cost reductions lead to reduced prices and reduced profit.
- Cost-based contracts are administratively burdensome to both Government and industry. They specifically identified certified cost or pricing data, CAS, and Cost Performance and Cost/Schedule Status Reports in this regard.
- Cost-based contracts present barriers to commercial firms in that the Government imposes Government unique accounting requirements on industry.[ibid]

Extrapolating from its recommendations, the Task Force opined DoD could save approximately $1.7 billion over a five year period ($340 million a year), mainly from

reductions in the oversight community. The Task Force reasoned that a reduction in cost-based contracts would result in "significant reductions" to the staffs of those concerned with auditing cost-based contract data - the nationwide staffs of the Defense Contracting Audit Agency (DCAA) and the Defense Contracts Management Command (DCMC).[ibid] While all of these savings do not directly result from the elimination of certified cost or pricing data and while reductions of this magnitude are unlikely at best, it's worth noting that the Task Force believes (a) significant savings can be achieved through expanding the use of PBA and (b) expanding PBA would potentially decrease the need for Government oversight.

The key to achieving savings (within the context of certified cost or pricing data) through PBA is to identify those areas for improvement where:

- Certified cost or pricing data is currently required and
- PBA could logically be implemented to improve efficiency by eliminating the cost of the certified cost or pricing data.

In January 1999, the Assistant Deputy Under Secretary of Defense (Systems Acquisition) sponsored TASC, Inc. (a division of Litton Industries) to support Dr. Gansler's PBA

study. Specifically, TASC was hired to develop a profile of recent DoD purchasing patterns (for contracts over $25,000), along with those instances when certified cost or pricing data were required.[Ref 34: p.1] In the execution of the study, TASC reviewed DoD's DD350 database (essentially a database of contracting information) to categorize contracting actions covering over 1600 Federal Supply Classes (FSCs).[Ref 34: p.4] Each of the FSCs could be categorized as either Supplies and Equipment, Research and Development (R&D), or Services and Construction.

In fiscal year 1998 (FY98) DoD let just over $118 billion in contracts. The specific breakdown by category and contract type (where Cost is cost-based, Fixed is fixed price, and NS is not specified) is provided in Table 5-1 below.

Table 5-1

	Contract Type			
	Cost	Fixed	NS	Total
Supplies and Equip	10B	37.1B	2B	49.1B
R and D	17B	3.1B	0B	20.1B
Svcs and Const.	18.5B	29.2B	1.2B	48.9B
Total	45.5B	69.3B	3.3B	118.1B
				(In FY98 $B)

The distribution of dollar amounts by contract type within each category is not particularly surprising - for example, one would expect a larger percentage of general supplies and equipment to be purchased with fixed price type contracts than with cost-based contracts. Likewise, a riskier venture, such as procuring R&D, is more likely to appear on a cost-based contract. However, in reviewing the data within each FSC, one finds the likely areas for improvement to implement a PBA policy and achieve increased efficiency.

For example, in FY98 DoD spent approximately $197 million on advertising services, using only fixed price competitive contracts ($108M) and cost-based competitive contracts ($89M).[ibid] Note that in all cases the contracts were *competed*. Further, the contracts were competed in a market (advertising) for which there is a rather large commercial sector (on the supply side) as well as commercial demand. In other words, the market forces of supply and demand are, in theory, well represented in determining price.

Continuing, only three DoD buyers use the fixed price competitive method of purchasing advertising services. [ibid] Yet the major DoD buyer using this method requires 100% certified cost or pricing data while the other two

buyers require none. On the cost-based competitive side, two buying commands require 100% certified cost or pricing data while two others require none.[ibid]

As noted previously, certified cost or pricing data is not required when adequate competition exists nor is it required when purchasing commercial items. In the case of advertising services, both of these exemptions would appear to apply. Further, DoD has demonstrated the ability to purchase these services without requiring certified cost or pricing data, as seen by the commands above who do so in both fixed price and cost-based competitive contract situations. Clearly, DoD incurs the certified cost or pricing data premium in this instance as a result of inconsistent policy application rather than satisfying a bona fide need.

Also in FY98, DoD purchased a little over $56.4 million in household furniture. Of this amount, nearly half of the purchases for what are rather common commercial items required certified cost or pricing data.[ibid] DoD should have little difficulty in conducting market research on household furniture items and should therefore be able to base its procurement decisions on price analysis rather than cost analysis. Given the number of commercial vendors selling furniture, the certified cost or pricing data can

be exempted due to adequate competition and because it is a commercial item. Again, DoD has demonstrated it can do this but has not demonstrated consistent application of policy.

Again in FY98, DoD spent about $650 million on components (low technology) of wheeled trucks and truck tractors. Of that amount, approximately one-third ($219M) was procured on follow-on contracts to existing fixed price contracts, follow-on contracts requiring certified cost or pricing data.[ibid]

In analyzing this scenario, two things become rather clear. First, trucks and tractor trailers are rather predominant in the commercial sector. One need only drive down any interstate highway to ascertain that fact. Second, the follow-on aspect of the contract means the Government has just purchased the items on the original contract. In other words, it should already know what the items cost having just bought them on the pre-existing contract. Again, the Government has applied the requirement for certified cost or pricing data in an instance when either a commercial exemption exists or the information is already in their possession (or both), adding unnecessary cost to the item.

Attempting to apply this analysis to R&D procurements is much more challenging. Because of the nature of the purchase and the inherent risk to both Government and contractor, the Government normally employs a cost-based contract type. Further, it's often difficult to assess whether a commercial application exists or whether the R&D project will even result in a tangible military application. For those reasons, the majority of R&D procurements are best assessed on a case specific basis when regarding the applicability of PBA.

Because the market forces of supply and demand act to determine price (and therefore facilitate price analysis), the most obvious candidates for application of PBA, and thus eradication of certified cost or pricing data, are contracts

- where competition exists,
- where a commercial market exists or where historical data is readily available and
- for common supplies and services.

(Author's note: That these conditions may lie at one end of a PBA "continuum" has been the subject of several debates and discussions in various courses taught at NPS.) In FY98, DoD spent approximately $4.2 billion on commercial services using competitive contracts (either fixed price or

cost-based) requiring certified cost or pricing data.[ibid] It spent another $38 million on fixed price follow-on contracts also requiring cost or pricing data.

Applying the Coopers & Lybrand cost factor of 1.3% of the value added portion of the contract, DoD could achieve savings of (4.238 billion) X (.6 value added) X (.013) or a little over $33 million just by moving to PBA in those areas identified as having potential for improvement. DoD would save another $1.8 million in certified cost or pricing data premium by moving toward PBA in its competitive and follow-on procurement of low technology supplies and equipment.

Pareto improvement is achieved as DoD realizes savings by eliminating unnecessary requirements for certified cost or pricing data. In the areas identified as candidates for Pareto improvement, the commercial and/or competitive market forces of supply and demand act to regulate the price mechanism. DoD can therefore use market research as a basis for price analysis in making procurement decisions.

Although theoretical in nature, the price regulating forces of supply and demand can be seen in practice. LCDR Steve Morgan is a Contracting Officer at Naval Air Systems Command (NAVAIR) in Patuxent River, Maryland. Addressing a contracting seminar at the Naval Postgraduate School, he

was asked a question concerning discussions and negotiations with contractors to obtain adequate prices. LCDR Morgan replied that the market forces of competition were more than adequate to obtain prices well below his target (normally a target determined by the amount of money a Program Manager has indicated he has available.) Further, in four of the seven major procurements in which he has been involved (primarily for low level maintenance and spare parts for aircraft), not only did the competitive forces of the market exert downward pressure on price, but also the lowest price accompanied the most highly rated technical proposal.[Ref 25]

In follow-on contracts, DoD already has the data available from the pre-existing contract and can use it, if necessary, to determine price reasonableness. Industry is relieved of the administrative burden and cost associated with preparation and presentation of certified cost or pricing data.

To briefly summarize, the Government has the potential to realize Pareto improvement by moving to PBA in selected contractual situations, specifically in competitive and follow-on contracts requiring certified cost or pricing data. Those contracts best suited for PBA are contracts purchasing common, low technology goods and services for

which there is an existing commercial market. Essentially, these are just contracts for which, in most cases, an exemption already exists. Applying PBA procedures in these specific areas can potentially eliminate the cost premium associated with certified cost or pricing data by reducing administrative burden, audit, and oversight.

2. *Expand Use of Parametric Estimating*

On 23 August 1999, the Director of Defense Procurement, Ms. Eleanor R. Spector, issued a memorandum to the Directors of Defense Agencies (among others) addressing the topic of parametric estimating. In the memo, Ms. Spector stated that parametric models, properly calibrated, would be able to "…estimate costs accurately while reducing bid and proposal costs and cycle time…"[Ref 32: p.1] Further, Ms. Spector stated,

> I strongly encourage you to use parametric estimating as a substitute for obtaining voluminous cost or pricing data whenever you can.[ibid]

While parametric cost estimating techniques are not new (the origins date back to World War II), they are relatively new to the Government contracting business. [Ref 11: p.4] The first formal Government study commissioned to enhance the use of parametrics was not assembled until 1994.[ibid]

Parametric estimating is a method that essentially employs a mathematically validated (historical) relationship(s) between a product's assigned costs and the resources consumed in its production. That relationship is known as a cost estimating relationship (CER). A parametric cost model can be described as a group of "cost estimating relationships used together to estimate entire cost proposals or significant portions thereof."[ibid]

Until recently, contractors have not often used parametric estimating techniques in submitting cost estimates on their proposals for Government contracts. The reasons most commonly cited for this include lack of awareness or understanding by both parties, perceptions that regulations would not allow it (specifically TINA), and few examples of actual success.[Ref 19: p.F-1]

Then in December 1995, Ms. Spector signed the first of her letters addressing parametrics. In that first letter she stated the FAR "…does not preclude the use of parametric techniques and I see no other regulatory obstacles…"[Ref 32: p.1] As a result, in December of that same year, DCAA and DCMC sponsored a Reinvention Laboratory to evaluate Government and industry's use of parametric estimating techniques on contract proposals.[Ref 19: p.F-1]

The Reinvention Laboratory was a collaborative effort between the Government and 13 different companies, including major defense contractors Boeing, Lockheed Martin, Northrop Grumman, and Raytheon. The results of the Reinvention Laboratory provide the framework for determining if Pareto improvement can be achieved by expanding the use of parametrics.

Members of the study used a number of different parametric techniques including CERs and actually negotiated contract proposals using the techniques. In a number of the test cases, proposal preparation, evaluation, and negotiation costs and cycle time were **reduced by between 50% and 80%.**[ibid] Better still, the team members calculated the accuracy of the estimates to be equal to or better than that of traditional methods because of the reliance of parametrics on historical data. Finally, using DCAA and DCMC resources, the Reinvention Laboratory confirmed that the results complied with all Government regulations and laws, including those requiring certified cost or pricing data under TINA.[ibid]

However, in determining the utility of parametric estimating techniques in improving efficiency within Government procurement, one must consider certain factors. First, parametrics relies greatly upon historical data.

Without it, no validated cost estimating relationships can be developed to forecast costs with any reasonable certainty of accuracy. As a result, contractors would need a method for collecting historical data upon which they can establish CERs.

Next, the CERs have to be logical and must be normalized or "smoothed" for external factors (e.g. inflation.) Finally, the cost estimates would need some initial testing for credibility before they could be fully relied upon as the sole source for cost proposals.

Realistically, then, certain areas of Government contracting are not amenable to parametric cost estimating techniques. R&D contracts, for example, are in many cases exploring unknown areas of technology. Historical data would be difficult to obtain, if at all, and may arguably bear little logical connection from contract to contract.

Given the factors that must be taken into account to implement parametric systems, the most logical candidate for implementation is in the area of the fixed price follow-on contracts described in subparagraph (1) above. Using the DD350 data collated by TASC, and excluding R&D contracts, in FY98 the Government contracted for $60 million in low technology supplies and services using fixed price follow-on contracts requiring certified cost or

pricing data. It contracted for another $38 million in commercial services using the same contract vehicle, for a total of $98 million.[Ref 5: p.66]

For lack of anything to indicate otherwise, assume the cost of preparing, evaluating, and submitting certified cost and pricing data for a proposal constitutes half of the 1.3% cost premium identified by Coopers and Lybrand. Applying that cost premium to the follow-on contracts results in ($98 million) X (.6 value added) X [1.3% X .5] or $3,822,000. Using the Reinvention Laboratory's low estimate of 50% savings, the Government could potentially save nearly $2 million per year by expanding the use of parametric estimating techniques to fixed price follow-on contracts requiring certified cost or pricing data.

However, before claiming Pareto improvement, one must consider that there will be start-up costs involved in developing whatever parametric systems are implemented. Ergo, industry (and therefore the Government, through cost reimbursement) will bear an expense to achieve these savings.

Pareto improvement can still be achieved provided the cost of implementation would be less than $2 million. In assessing the parametrics implementation, the party being made worse off (the contractor) will expect reimbursement.

As long as the cost of reimbursement (i.e. the cost to implement the parametric system) was less that the savings realized by the Government, Pareto improvement is realized.

Because it has a contractual relationship with the firm or industry in question (unlike the example in Chapter III) the Government would reimburse industry the amount it costs to implement parametric cost estimating systems. Provided the cost did not exceed the savings (in the case of fixed price follow-on contracts it was $2 million), industry's position remains unchanged while the Government is better off by $2 million less the cost of implementation. However, should the cost of implementation exceed $2 million, Pareto improvement is not achievable.

In closing, it must be noted that rapid changes in technology and/or improvements in manufacturing processes dictate that CERs be periodically updated to retain credibility and validity. The parametric cost estimates are only as good as the CERs upon which they are based and major changes in industry processes may affect the mathematically valid relationship between cost and resources consumed.

E. SUMMARY

The requirement to submit certified cost or pricing data came about as a result of Congressional legislation.

In 1962, Congress passed the Truth in Negotiations Act (TINA) which set forth the situations in which the data was required. Those situations include when the dollar value of contract exceeds $500,000, when a contract adjustment exceeds the same value, when a subcontract is greater than $500,000, when a modification is greater than $500,000, or when the Head of a Contracting Activity determines it necessary. Exemptions can be granted for contract situations where adequate competition exists, when price is set by regulation or law, when purchasing a commercial product, or when a waiver has been granted.

Requiring certified cost or pricing data gives the Government access to a contractor's books so it provides leverage in negotiating cost-based contracts and it may act to deter overpricing. On the other hand, it results in added expense, it's administratively burdensome, it may limit competition, and it's often repetitive in its requirements.

To realize Pareto improvement in the area of certified cost or pricing data, the Government should expand the use of Price-Based Acquisition in selected contractual situations. These areas, in which the requirement for certified cost or pricing data appears to be more the result of inconsistent application of policy than anything

else, include competitive contracts (both fixed price and cost-based) and follow-on contracts. The commodities that lend themselves to PBA procurement are common, low technology goods and services for which a thriving commercial market is available.

Applying PBA to competitive contracts logically allows the market forces of supply and demand to determine price while applying PBA to follow-on contracts eliminates duplication of effort. Overall, moving to PBA in these specific areas could potentially eliminate slightly over $34 million dollars in certified cost or pricing data premium. Further savings may be realized as the need to audit the certified cost or pricing data is also eliminated.

The Government could also see Pareto improvement by accepting cost proposals using parametric cost estimating techniques. Although still in its infancy, this program has demonstrated potential in test cases run by a joint Government/industry Reinvention laboratory. The potential for savings may be as high as 50%-80% reduction in proposal preparation, evaluation, and negotiation cycle time. Parametrics relies heavily on historical data and is therefore subject to start-up costs associated with data collection and parametric software systems. However,

provided the cost of implementation did not exceed initial savings, Pareto improvement can be achieved.

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VI. CONCLUSIONS AND RECOMMENDATIONS

The principal conclusions and recommendations derived from this research are presented in the following pages. The research closes with answers to the primary and secondary research questions and potential areas for further research.

A. CONCLUSIONS

That the Government engages, within the purview of both the economy in general and the "micro-economy" of Government acquisition, in a number of activities designed to influence market behavior is a given. In practice, the Government imposes regulations in an attempt to (a) correct what it perceives to be "market failure" and (b) implement what it perceives to be desirable socio-economic goals.

Although the Government does gain some of the benefits it seeks, it also incurs significant costs in doing so. Further, it acts in a manner that sub-optimizes the efficiency of the markets in which it operates. In some cases it does so deliberately. For example, in setting aside purchases for small business factions, the Government knowingly transfers resources from the efficient producers to perhaps less efficient producers of the same goods.

Throughout the course of this research it has become obvious the Government could change numerous policies and/or procedures to improve the efficiency of its operations. However, doing so would entail a potential loss of welfare to one of the parties involved - either Government or the industry with which it contracts. Achieving *Pareto improvement*, making one party in the market better off without making the other worse off, is a more daunting task.

This research concludes with two major observations regarding Pareto improvement in Government contracting. The first conclusion is that, on an incremental basis, the Government can change the way it conducts business to achieve Pareto improvement in those regulatory areas dealing with *industrial regulation*. Both Cost Accounting Standards (CAS) and the requirement for certified cost or pricing data have been implemented to correct some perceived market failure within the Government procurement field. Incremental change in each of these areas will result in an improvement to the financial position of Government, industry, or both (due to the "cost reimbursement" factor of the Government/industry business relationship.)

The second major conclusion of this research is that the Government cannot effect Pareto improvement in areas of social regulation, such as Small Business Set-Asides. Further, it cannot achieve even a measure of improvement in efficiency unless it applies the Hicks-Kaldor criterion. However, in doing so, any improvement becomes merely theoretical and, as such, is not practicable. In instances of social regulation, the Government is seeking to transfer resources, albeit not necessarily efficiently, from one sector of the industrial base to another. It has made a conscious decision to forego conducting business in the most efficient manner in order to provide that resource transfer. The very nature of the transaction, making one party *worse off* in order to make another better off, precludes any notion of Pareto improvement outside that of a theoretical nature.

B. RECOMMENDATIONS

The following recommendations are targeted toward those areas where Pareto improvement can be achieved, namely within the Government's industrial regulation initiatives of CAS and certified cost or pricing data. Because Pareto improvement cannot be realized within the social regulatory framework, any recommendations offered

would consist of political commentary not suited for this research.

1. Eliminate CAS Standards 402/405/406/416

One of the most obvious costs of CAS is that it limits competition because it requires a separate Government unique accounting system be implemented. Reducing the cost associated with that administrative burden is not only less expensive in specific contractual situations, but it is likely to reduce cost, in general, due to the competitive effects of market entry. Because these standards are, in effect, duplicates of existing regulation contained in the Federal Acquisition Regulation (FAR) Part 31, they add no value to the Government. In fact, because they exist separately and require a duplicate accounting framework to collect, collate, and report data in a Government unique format, they actually add to the cost of doing business. Eliminating these standards reduces the cost of maintaining this separate accounting framework while retaining the same coverage through FAR Part 31.

2. Increase the CAS Threshold to $100M

Raising the CAS threshold, even by a whopping 400%, retains some form of CAS coverage on 99% of all current CAS covered pricing actions. However, it decreases the number of contractors subject to full coverage by 57% - a powerful

incentive to compete for contracts which previously may have fallen under full coverage thresholds.

3. Move CAS Waiver Authority Down to Agency Level

Instead of requiring CAS waivers to filter through numerous administrative levels, the Government should move the waiver authority down to the agency level. Doing so decreases administrative time and costs of considering the waiver in the first place. Further, it empowers the agencies, who arguably know their requirements better than any other organization, with the flexibility to apply sound business judgment in granting waivers when confident the Government's interests are protected. Finally, it would reduce the duplication of having to reapply for a waiver each time another contract was let with the same contractor in the same waiver eligible situation.

4. Expand the Use of Price-Based Acquisition

Current policy demonstrates a bias toward certified cost or pricing data and requires a waiver in those cases where the contracting officer feels it isn't necessary. That policy should be reversed for the areas identified as eligible for Pareto improvement, requiring PBA practices be used with a waiver required to *ask for* certified cost or pricing data. Requiring PBA practices in competitive and follow-on contract situations is really more of a matter of

applying policy consistently to achieve a more efficient business process.

5. Expand the Use of Parametrics

Although relatively new to the field of Government contracting, parametric cost estimating techniques have the potential to become a more efficient way of developing cost estimates for cost-based contract proposals. In those situations where solid Cost Estimating Relationships (CERs) can be established and verified, parametrics may reduce proposal preparation, evaluation, and negotiation time by up to 80%, while attaining an accuracy equivalent to more conventional methods. While some costs associated with data collection and parametric software development may initially reduce total cost savings, in the long run parametrics looks to be an improved business practice for both Government and industry.

C. ANSWERS TO RESEARCH QUESTIONS

1. *Primary Research Question: Are there any policies, procedures, regulations, and/or statutes governing contracting within the Federal Government that can be modified/eliminated to effect Pareto improvement?*

In general, the answer is yes. However, the incremental changes that the Government can make to effect Pareto improvement with the contracting field are confined

to those areas in which the Government has engaged in industrial regulation. Regulatory modification in areas of social regulation, like the Small Business Set-Aside programs, cannot be modified to realize anything but theoretical improvements in efficiency.

2. *What is the economic effect, in general, of Government acquisition regulations?*

In general, the Government benefits from it regulatory efforts in that it has access to contractors' accounting records, thus alleviating asymmetric information. Further, the Government provides a "social good" by guaranteeing business to small business, it promotes competition to some extent, and it provides a legal framework within which Government contracting operates. However, Government regulation is also costly, administratively burdensome, and inefficient in that it transfer resources, in some cases, to higher cost producers. Additionally, it may actually restrict competition in that some firms prefer to bypass doing business with the Government to avoid the costs associated with Government regulation.

3. *Can Small Business Programs requirements be changed to effect Pareto improvement?*

No. The transfer of resources from one sector of the business community to another (small business) is executed

for the specific purpose of making one party better off at the expense of another. By providing a de facto subsidy to small business concerns, the Government forsakes efficiency in contracting practices for the express goal of ensuring a continuous stream of income for small business.

4. Can the Cost Accounting Standards (CAS) be modified to effect Pareto improvement?

Yes, CAS can be changed to realize Pareto improvement. CAS standards 402, 405, 406, and 416 are essentially duplicated in FAR part 31. Eliminating these standards would eliminate a portion of the Government unique accounting framework that firms must construct to comply with CAS while retaining the intended effect under the FAR coverage. Raising the CAS threshold to $100M would also significantly reduce the number of firms subject to CAS, yet 99% of CAS covered pricing actions would retain CAS coverage in some form or another.

5. Can the requirements for certified cost or pricing data be modified to effect Pareto improvement?

Yes, implementing Price-Based Acquisition (PBA) contracting practices in certain areas ripe for improvement will lower the administrative costs of administering these contracts. By using PBA for competitive and follow-on contracts for commercial, low technology goods and

services, the Government employs the market forces of supply and demand to regulate price. In doing so, the Government lowers the cost of doing business to begin with and also lowers the "life cycle" cost of those contracts since audits and oversight would also be sharply reduced.

Additionally, using more parametric cost estimating techniques may lower proposal development, evaluation, negotiation, and cycle time by as much as 80% on contracts for which valid Cost Estimating Relationships (CERs) can be developed from credible historical cost data.

6. How might current acquisition policies and processes be changed to effect Pareto improvement?

In general, the key to generating Pareto improvement and greater efficiency within the field of Government contracting lies in taking a less regulatory approach. Invariably, the Government achieves a portion of what it intends through its regulations. In doing so, however, it incurs substantial costs in loss of efficiency, reduced competition, administrative burden, and reduced flexibility.

D. AREAS FOR FURTHER RESEARCH

- Case study, limited to a specific major defense contractor, on the costs associated with implementing CAS vs. the benefits gained by the Government vis-à-vis that company.
- Legal review of protests/lawsuits in the area of defective pricing as a result of certified cost or pricing data that was NOT current, accurate, and complete.
- Cost/benefit analysis of the Revolution in Business Affairs initiative.
- Cost/benefit analysis in implementing Civil-Military Integration (CMI) initiatives.

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